COMPUTER WEEKLY

CDC still hopes to sell system to Soviets

DESPITE the refusal of the US government to allow a Control Data Cyber 76 to be installed in Moscow for use in the worldwide weather network (CW, July 7), CDC is still actively pursuing its Russian connections (see front page).

In fact, CDC still hopes to sell a system for use in the weather network, possibly in the Cyber 172 range, although this would not give the same quality of forecast as the faster Cyber 76.

The Soviet Union is also keen on a Plato educational system, similar to a 500 terminal $3 million system recently sold to the Canadian government based on a Cyber 73, *which is about as powerful as a Cyber 172.*

Then there is the possibility of a joint production venture. According to memoranda and testimony made public during the course of the US Justice Department's IBM anti-trust case, this interest dates back to 1973.

On September 12, 1973, CDC chairman William Norris wrote a memo which referred to the negative way in which US government *officials had responded to CDC/Russian talks.*

"The real shocker is the joint development (with the Soviet Union) of an advanced computer" Norris wrote in the memo.

One of two projects discussed in 1973 was the "recursive" computer, which has now resurfaced (see page 1).

"It looks like there is a possibility of starting a small scale investigation into the feasibility of this system," was CDC's guarded comment this week.

Although CDC and Russian officials have agreed on co-operation, CDC has not yet applied to the US government for permission to proceed with the project.

NEWS IN BRIEF

Insac 30% share in SPL

THE long-awaited agreement between SPL International and the National Enterprise Board's Insac software export subsidiary should be officially concluded today (Thursday).

Insac will take a share of about 30% in SPL, previously wholly owned by the Simon Engineering group. Further details of the *agreement will not be released* prior to the signing of contracts.

Double discount

ATLANTIC Computer Leasing has effectively doubled the discount it offers to customers taking up its five- and six-year Flexlease contracts instead of IBM's four-year Term Lease Plan. This means that the cost of a 370/138 under five-year Flexlease, for example, is now 8% less than under TLP (if IBM's maintenance charge is deducted from the TLP charge), while a 148 under a six-year Flexlease costs 20% less.

High level language

STEPPING into the high level language area of microprocessing, Zilog has now introduced its own software package, PL/Z. Developed by Zilog's director of software, Dr Charlie Bass, after considerable evaluation of existing high level languages, PL/Z has been based on a modular approach.

370 emulator bid

A BID to win IBM users over to the 90/80 is being made by Univac with a 370 emulator. Combining hardware, software and firmware, it allows users to run IBM programs without changing coding or job control statements. The performance overhead is no more than a two or 3% reduction in throughput.

The French Tic Tac system.

Viewdata open to competition

PRIVATE organisations will now be able to offer competitive computer-based *information services* to the Post Office's Viewdata. And Viewdata, for the first time, gives users the chance to buy terminals with an integral modem.

These facts emerged from the first major seminar on Viewdata held last week by Butler Cox and Partners in conjunction with the Post Office.

Any receiver adapted for Viewdata will be able to access the privately run information service. The Post Office has conceded the principle of provision of equipment with integral modems. But it is not yet clear whether the ruling will apply only to receivers also capable of taking ordinary television signals, or whether it will apply to commercially-available Viewdata-only terminals planned by companies like GEC and ITT for business use.

The pilot public trial of Viewdata begins next summer with 1,000 statistically-selected families in London, Birmingham and Norwich having sets installed in their homes. In addition at least one terminal will be installed in a Post Office where any member of the general public can use it. The Post Office hopes to begin a public service starting in London in 1979.

Viewdata links the domestic television receiver via the home telephone to a computer database theoretically capable of storing unlimited data. It is an interactive system, and has been designed so that it can be used by people with no prior knowledge of computers.

The range of applications for Viewdata is wide. It can offer anything from simple information retrieval such as timetable data, shopping guides and weather forecasts to things like constantly updated lists of houses for sale, or jobs on offer.

Equally, it could take over from human counsellors in many of the straightforward inquiries made every day by the general public, from checking social security and supplementary benefit entitlement to self-diagnosis of simple ailments by a question and answer routine.

Tic Tac alternative

THE export potential of the technology developed by the Post Office for Viewdata is underlined by the news that the Bundespost in West Germany has bought a GEC 4080 minicomputer and rights to the software for trials of the system in West Germany.

However, the French are developing an alternative system, Tic Tac, pictured here on the PTT stand at Sicob, which is somewhat different from Viewdata. Instead of using an adapted TV set, Tic Tac plugs straight into the serial socket. This means that all the circuitry can be contained in the simple box in the picture.

Use of the serial socket at present limits Tic Tac to black and white display only, and display quality is also inferior.

Although at first sight Tic Tac appears substantially incompatible with Viewdata, Roy Bright, head of Viewdata international operations, is optimistic that some level of compatibility can be achieved.

"We are working towards standardisation with the French and things look hopeful," he said.

SOLD OUT

COMPUTER Weekly's Charity Ball is completely sold out and no further orders for tickets can be accepted. Over 600 guests will attend the ball at the Royal *Lancaster Hotel, London,* on October 14, and the proceeds are to be donated to the BCS Specialist Group for the Disabled to aid development of terminals for use by the handicapped.

Honeywell packaging problems

THE problems that Honeywell has encountered with the micropackaging technique for interconnecting large numbers *of CPU chips have not yet been* solved, but the company says that it is still working on a solution, and does not plan to use an alternate technology in the large-scale 66/85.

First deliveries of the 66/85, *originally planned for the end of* the year, have been put off to an indefinite date in 1978. The circuit chips themselves come from Texas Instruments, Nippon Electric and Honeywell's own facilities, and the company says there have been no problems with these.

The company has reduced its orders for these chips, but expects to return to the original volumes.

Honeywell also denies US reports that one of its first customers for the large-scale 66/85, Metropolitan Life Assurance, has cancelled its order for two of the systems.

"The company is merely renegotiating its contract," said a spokesman.

More software for System 34

IN parallel with the hardware enhancements to the IBM System 34 (CW, September 22), more software has been announced *for the machine.* In addition to the Fortran IV compiler, a project management package will be available.

Known as Job Analysis System 34, it is claimed to be able to handle "almost any type of project susceptible to Critical Path Method analysis," and could prove an interesting rival to ICL's established Pert software.

Both products are scheduled to become available in the last quarter of next year. In the US, a number of applications products *for manufacturing and distribution* systems were also announced.

CSA recruit

CONSULTANCY and bureau Systemsolve, of Sunbury-on-Thames, a specialist in ICL 2903 and 2904 software, joined the Computing Services Association last week as a full member.

Nippon thrust into UK micro market

AIMING at a position in the top three suppliers of memory/microprocessor devices in the UK, NEC Electronics (Europe), a division of the Nippon Electric Company of Japan, has set up a marketing organisation in this country.

Headed by Mr J. A. Morrison formerly a sales manager with ITT Semiconductors, the new company is predicting that it will achieve this aim by the end of 1978, and that it will have a 10% share of the European semiconductor market by the end of 1982.

Morrison will be responsible for the sale of a wide range of products, including display devices, lasers, capacitors and standard semiconductors.

But it is in the memory and *microprocessor markets* that the biggest thrust will be made. NEC is currently manufacturing devices from the Intel 8080 family under a second source agreement that includes the 8080, 8155, 8156, 8355 and 8755.

Early next year it will start second sourcing the AMD 2900 bit slice microprocessor, and claims that its version will be up to 30% faster than the current 2900 family.

NEC also has its own developments to sell. These include the Microcom series 4-bit single-chip microcomputers which offer a variety of circuits, including the type with 2K bytes of ROM and bytes of RAM, and the type with 1K byte of ROM and bytes of RAM.

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Briefing

The 10 mips CDC/Russian project

THE "recursive computer" project announced last week as a joint CDC/Russian project will aim at producing a system consisting of an array of 64 microprocessors that will operate at about 10 million instructions per second.

CDC has not yet approached the US government for approval. But a White House spokesman confirmed that the President considered that the doors were still open for the sale of a CDC system to Russia for the worldwide weather network, provided it was not big enough to provide "a significant military potential." President Carter recently banned the sale of a CDC Cyber 176 to Russia.

Into Europe

JUST nine months after its formation, the UK consultancy Butler Cox and Partners is moving into Europe by forming a subsidiary in Holland. One of the Dutch company's main jobs will be to give a more international outlook to Butler Cox and Partners' research organisation, the Butler Cox Foundation. See page 18.

Euronet course

A COURSE on using Euronet, the international network, to access medical databases is to be held at Sheffield University from December 6 to 9. The course will teach experienced information workers the technical potential, economics and expected development of the network. Those attending will be expected to help train people in their own countries. Further details from Professor M. F. Lynch, Sheffield University Postgraduate School of Librarianship and Information Science, Western Bank, Sheffield S10 2TN.

Siemens' stake

A 20% STAKE in California-based microprocessor manufacturer, Advanced Micro Devices, has been taken by Siemens, and the two companies are to set up a jointly owned company to manufacture and market microcomputer systems on a worldwide basis. Siemens, which will have a 60% holding in the new operation, paid $22.5 million (£12.8 million) for its stake in AMD.

Swift on B876

IMPLEMENTATION of the Swift interface software for the new B876 small computer is under way at Burroughs. This should solve some of the capacity problems that banks have found with Burroughs' original B7 SID.

Standards manual

A DOCUMENTATION standards manual for IBM System 3 and System 32 users has been produced by the IBM Computer Users' Association. The association says the manual is needed because many small system users do not have the knowledge or experience to draw up standards of their own.

Talking point.....

The relationship between computer technology and society was a major theme of last week's Datafair.

In a speech after the Datafair dinner, Sir Monty Finniston, former head of the British Steel Corporation called on computer scientists to take responsibility for alerting society to the possible impact of computers.

And during the conference Mike Cooley, past president of the white collar TASS section of the Amalgamated Engineering Union said he was "extremely critical of the way technology is being introduced because it will mean a frantic work pace for some and a growing dole queue for others."

He said he was not anti-computer but felt that technology should become more human and socially acceptable.

Our photo shows Sir Monty in thoughtful conversation during the Datafair dinner with Drude Bernstein, director of the Norwegian National Computing Centre, who spoke on distributed processing during the conference.

● Datafair report — Page 18.

ICL breakthrough in East Europe

A *MAJOR* breakthrough in East Europe has been made by ICL with the first sale there of a 2900.

The system, a 2960 worth £1.8 million, has been sold to the Czechoslovak steel producers VZKG. Another UK company, Redifon, is to provide a 43-terminal Seecheck key-to-desk data preparation system to VZKG worth £373,000.

ICL won the VZKG order against competition *from an IBM 370/178 and it brings ICL's total* business in Czechoslovakia over the last 15 months to £3 million. VZKG currently has an ICL System 4-50 and will use the System 4 emulation facility under the VME/B operating system during the transition period.

Now that ICL has obtained a licence to sell the 2960 in East Europe, other orders could follow, with a 2960 sale to Russia expected soon.

● More on East-West trade, pages 27 and 34.

Stopgap to new IBM series

ROLE OF 3031 AND 3032

By Tim Palmer

THE 3032 and 3031 mainframes announced by IBM last week are stopgaps on the way to the company's next major line of mainframes, the E-series, which is expected to begin appearing with announcement of the E-Zero early next year.

Designed to replace the 370/115 and cover at least the low end of the 125, the E-Zero is likely to be offered at about £60,000 for a half-Megabyte system with a rating of about 0.2 mips, million instructions per second. By comparison, the 370/138 is rated at about 0.3 mips.

US sources say that the E-Series will be fully software-compatible with System 370, and the replacement for the 3033 is expected to appear in the fourth quarter of *1979.*

UK pricing on the 3032 — which seems to favour purchase rather more than do US prices — indicates that the 3031 could be replaced sooner. On monthly rental, the purchase price of a two Megabyte 3031 is written off over 35 months; and over 34 months for a six Megabyte system. On 48-month term lease plan the write-off for a small system is over 38 months.

The comparable periods for the 3032 for a minimum and maximum configuration are 37 months, 35 months and 41 months. On the 3033, the periods for a four Megabyte and an eight Megabyte system are 40 months, 43 months and 44 months *respectively.*

The 138 and 148 lease to purchase ratio was similar to that of the 3031, implying that all three machines will be very short-lived and will be replaced by one or more E-series models before the end of the decade.

Another reason for the competitive pricing of the mid-range machines may be to ward off the challenge from Itel with the AS series and Control Data with the Omega plug-compatible CPUs. IBM cannot afford to be equally generous with rental terms for fear that scores of users with almost new 135s, 145s and 158s on rental would immediately trade them in for the new models.

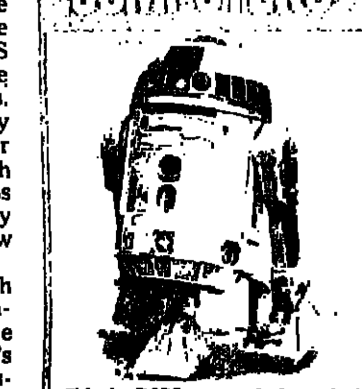
Unlike the 115 and 125 which are both batch-oriented machines, the E-zero will be the spearhead for IBM DP division's move into distributed processing at the lower end of the mainframe market.

IBM's commitment to communications and distributed processing has been given a further boost with the announcement that the Office System 6 and the 6640 ink-jet printer can now be attached to IBM's 3750 telephone switching system for *sending and receiving overnight*

● Turn to Page 2

Analysis of the 3030 series — pages 20 and 21.

ASIMOV ON COMPUTERS



This is R2D2, one of the robot heroes of Star Wars, the science fiction film hit.

But the possibility of a world with intelligent robots is no longer merely a figment of fiction.

In a Futureview special, internationally renowned sci-fi author Isaac Asimov, who created the laws of robotics, talks to Dr Christopher Evans about the role of computers in our future world.

Pages 32-33

Itel AS/6 reply to 3032

THE 3032 and 3031 announcements have spurred Itel to introduce its AS/6 large-scale plug-compatible CPU, which is claimed to match the power of the 370/168-3 and to be 1.1 to 1.25 times as powerful as the new 3032. It runs IBM system and application software unchanged.

The machine, which is being built for Itel by Hitachi in Japan, is air-cooled where the 3032 is water-cooled, and has a 64K-byte buffer compared with the 32K buffer on the 3032. It offers a maximum of 16 channels compared with 12 on the 3032, and is priced at £1.12 million for a two Megabyte system compared with £1.35 million for a 3032. Deliveries begin in March.

Amdahl has announced that it has studied the new IBM machines and sees no reason to modify its current product plan for the 470 line.

When IBM announced the 3033, Amdahl responded with the 470V/7, offering considerably more power than the 3033. The 470V/6 matches the power of the 3033, the 470V/5 matches the 3032, and Amdahl is considering a new smaller processor which would compete with the 3031.

2900 consultancy formed

AN ICL 2900 operations consultancy called Operability has been formed by Brian Norris and Jim Read, two ex-ICL operations specialists. The company has already been involved in 2900 operations including the installation of a 2960 under VME/B at Hogg Robinson of Leicester and a 2960 under 1900/DME at the Anglia Building Society in Northampton.

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COMPUTERVIEW

How will IBM face challenge of the future?

THE 3031 and 3032 (see front page) will ensure that IBM maintains the pressure on its medium/large rivals, while in the mini market the IBM *Series/1 is beginning* to eat into the traditional mini makers' territory.

Even in East Europe IBM reigns, for the joint USEC series being developed by the Socialist countries is IBM compatible (see Brno Exhibition report, page 34).

In the DP world, therefore, the dominance of IBM — or IBM compatible systems — is a force difficult to resist.

For the foreseeable future there will, of course, be room for rivals to IBM other than just its plug-compatible competitors. But IBM is such an all-pervading force in DP that it really holds all the trump cards, to be played at times of its own choosing.

It is clear, for example, that the 3030 series is an interim system before a major new range, the "E" series of neo-FS, is unveiled within two to three years.

In the long term, once the kerfuffle over current price/performance and purchase/rental terms has died down, the main significance about the 3030 will be seen as the boost it has *been designed to give the MVS*, which is likely to be a unifying factor of the E series plus its effects on the manufacturers of IBM plug-compatible processors.

According to reliable reports, the *actual* pricing of the 3032 changed by a few hundred thousand pounds in the last few days before announcement.

This could have been a pre-emptive move against Amdahl bringing out a new system to match IBM machines and it will be interesting to see whether IBM raises the prices significantly before first deliveries of the 3032 begin.

But the real challenge for *IBM* in the future is how is it going to diversify to become market leader in total information processing in the same way as its diktats shape the DP world.

In the information processing *field, IBM is facing some hefty* opposition. AT&T, the giant US communications company, Xerox and ITT, for example, have their eyes on the automated office and it is expected that the international oil corporation *Exxon will soon announce a low* cost word processor (CW, September 23).

The fight for the automated office is only a local battle in a much more significant wider war.

As David Butler explains in an interview with John Kavanagh (page 18), the convergence of telecommunications and computer technologies will have a profound effect on our future business and social life.

In a decade or less, our traditional view of the mainframe computer is like to seem as irrelevant as a prehistoric relic.

It will seem unbelievable that anyone was sucker enough to have bought some of the batch *dinosaurs that were unmercifully* flogged to unwary users in the mid-60s. And surely the only place for bulk printout management reports will be as exhibits *in the Science Museum*.

Computer power at everybody's finger tips, whether as a terminal or stand-alone processor, will virtually be regarded as a birthright, just as we expect electric power easily to *obey our every whim*.

The exact nature of the new information technology era of the 1980s is difficult to define precisely, although it is certain that microprocessors will be well to the forefront of develop*ments*.

And the heavy investment in traditional DP mainframes will ensure that there will be no revolutionary change in DP departments. The automated office, however, could provide *more fertile soil for sowing the* seeds of the information age.

That is why the E series, or whatever IBM calls its 370 successor, is likely to be of a fundamentally different architectural design than existing systems, oriented to functional processors and distributed intelligence.

And IBM could become vulnerable at the point when it will be shifting its emphasis to integrated information systems. For if there are any incompatibility problems in moving existing DP systems, the way could be opened to alternatives.

And these alternatives will not be other mainframe machines, but systems possibly from communications or semiconductor suppliers or outsiders like Exxon, which will bring together all the elements of information technology.

So, while the latest IBM announcements are chewed over, it should be remembered that they are but hors d'oeuvres. The main course is yet to come.

Ten years ago...

COMPUTER WEEKLY
OCTOBER 12, 1967

ANNOUNCING the formation *of a data communications* sub-division, to be known as DCS-1, Univac said that it would enable the 9000 Series *machines* to act either as online satellites or as the nucleus of small-scale remote batch processing systems . . . A front *page leader* asked the Prime Minister, the Rt Hon Harold Wilson, to say whether he was rescuing the UK computer *industry*. . . . Trustee Savings Banks in Dundee, Edinburgh, Glasgow and Paisley formed a consortium to handle computerised *accounting* and management systems . . . A letter from "Systems Analyst, Liverpool" queried whether lack of technical *knowledge* by computer managers was a greater evil than the DP staff who could not manage . . . Small accounting computers, *terminals*, data preparation and input equipment were much in evidence at the Business Efficiency Exhibition . . . *the Humble Oil and Refining* Co of Houston, Texas, opted for OCR equipment in its office automation programme. The order, worth over £1 million went to Recognition Equipment Inc.

INTERRUPT...

ONCE upon a time a programmer was given the task of changing a master file update program. The change was simple enough, except that he found one open logic path which led to a quite impossible data condition for which nothing was specified.

Being a helpful kind of chap, he programmed in a flexo-writer message just to mention that the impossible had occurred, and thought no more of the matter.

A few days later the manager responsible came to the programmer's desk and in hushed tones recounted what had happened in the production run.

After eight hours and 168 pages of output the flexo-writer had broken and the machine was out of action for 24 hours awaiting a replacement.

Yes, the data condition was impossible but there had been mistakes in the data generation before the master file take-on.

No, the operators were not supposed to allow jobs to continue in this way for that sort of time but there had been some argument recently over operations allegedly cutting off program runs in their prime of life.

Moral: Be prepared for all eventualities — particularly the worst ones.

● **Submitted by Alan Martin of Wellington, Surrey, who wins the weekly £5 interrupt prize.**

Stopgap to new IBM series

● **From Front Page**

electronic mail between company offices and company sites.

Initiation of the message sending process can be automated by use of a second computer to control the 3750. The control computer can be anything from a System 32 to a large 370.

The 3750 is not at present available in the US because IBM does not want to encroach too openly into AT&T's territory, but the telephone switching system or its successor is likely to be introduced there once the SBS joint venture with Comsat and Aetna Life gets under way.

FOCUS

. . . on whatever happened to the end user

THE theme of last week's "Datafair" — The End User — was an inspired choice. No other collection of individuals are so abused, ignored or misled by the DP industry. The end user's role in computing affairs is kept very much on the periphery.

At the best they are tolerated as a burden — a highly troublesome factor of DP life; at the worst, as an unmitigated menace, determined to frustrate the sound planning and judgment of the DP team.

By now the end user is accustomed to being kept in his place, normally as far away from the computer operation as possible. Unfortunately this tradition was maintained at Datafair.

Despite the theme, the end user was hardly in evidence, those present being a hefty representation of the computer trade or DP industry delegates. In the circumstances, maybe the lack of users was justified by the proceedings.

Many DP professionals present could well have found themselves out of their technological depth. The Cunard Hotel, it seemed, was adrift in pretty deep waters. It required more than a few bubble memories and LSI circuits to get it back on to the basic grounds of Hammersmith.

Deliberate attempts to inform and interest the end user were rarely in evidence. EMI yet again demonstrated its voice recognition system, Threshold. This is so obviously an end user benefit, that it is difficult to understand why the message has been so long in meeting response. Maybe they should pitch the volume a little higher.

Quest Automation likewise demonstrated their user designed Datapad system. Customers already include the banks, police and industry. Perhaps the written message gets across easier.

The conference itself scarcely interfaced with the end user. It was left to the BCS Specialist Group presentations to bring the proceedings back to the user level.

Langton Information presented a session on Microform text and illustration for the end user, a particularly relevant topic when the size of operation all too often equates with complexity.

Other sessions catering specifically for the end user included the business information system, a method of adopting systems to user information requirements and the operation groups, making the DP operation more responsive to the users' needs.

This user need has been ignored for far too long by the DP industry. The computer team — quite at home when it comes to interfacing between manufacturers, suppliers and service organisations — is strangely loath to venture into the world beyond the installation.

Terse complaints from the users are dealt with in remote mode. Messages are passed back down the communication channels from DPM to the systems manager, to the operations manager and eventually to the control supervisor. Here contact is made with the user and explanations why demands for additional applications are not possible, are made. At least until the company agrees to the long outstanding upgrade! The late delivery of work is blamed on the newly-installed disc controller. A replacement is in hand: the user is assured.

The user would be … assured if a responsible … executive was around to … the message personally. As … the two sides seldom meet.

New projects are conducted … analyst level; a well … method of ensuring … blunders.

Senior management … that, at least in their … the conflicting parties are … apart. Skirmishes should be … tained on the shop or … lation floor.

All, however, is now … ing, hopefully for the bene… all concerned. The current … occupation of the DP industry … to distribute minis and micros … all directions. This exercise … inevitably bring users and … professionals into close contact.

Banishing the mystique … both company computer operations and the user department responsibilities may … cement good relationships in the immediate future. But at least … should paste over all outstanding misunderstandings.

Simon disposes of its interest in SPL

THE long progress of the share deal between SPL International and the NEB's Insac subsidiary reached its climax last week, as anticipated, with the formal signing of contracts.

Simon Engineering, which previously owned 100% of SPL, has taken advantage of the NEB's interest to divest itself of its entire SPL shareholding.

A third party is also involved in the deal. This is *NDC Systems SA*, a Geneva-based associate company of the National Datacentre Corp, one of Canada's largest bureau and computer service organisations. Insac and NDC Systems have split the SPL shareholding between them.

Owing to legal procedures involving the SPL share structure, it has been necessary to found a holding company, Systems Programming Holdings, which owns 100% of SPL. Insac has purchased 80% of the dividend-bearing non-voting shares of SPH, for £800,000, and also holds 30% of the voting shares. The remaining 20% of non-voting and 70% of voting shares are held by NDC Systems.

Despite the indirect Canadian interest, SPL representatives emphasise that SPL and SPH are officially UK companies. This status can be critical in such matters as the awarding of government contracts.

A number of bids were made by prominent UK companies for the shares which eventually went to NDC Systems, SPL confirmed.

Simon's reason for disposing of its interest in SPL is that "no significant interdependence has developed" between SPL's software activities and Simon's main interests in engineering. "In order to realise SPL's full potential," it was decided that the shareholding should go to companies more committed to software development.

The total value of the deal is £1,250,000. In addition, the NEB will provide SPL with loan facilities of £1m.

16,300 computers in 7,000 locations . . .

INNOVATIONS in this year's Computer Users' Year Book' are a section on finance, which looks at methods of financing new hardware and gives guidelines for buying second-hand equipment and using independent maintenance companies; tables giving details of 34 word processing systems; and the distributed processing capabilities of computers and terminals.

The book, now in its ninth year, also has a bigger installation directory, which lists almost 16,300 computers in 7,000 locations.

The biggest section in the book is a 322-page guide to equipment and supplies, covering everything from the characteristics of individual mainframe models to the names and addresses of companies supplying wallpaper for computer rooms.

Other sections cover staff recruitment services, salaries, training organisations, character codes, standards, security, data transmission services and consultancy and bureau services, with names and details of companies and details of their facilities and charges.

'The Computer Users' Year Book 1977. 932pp. £17.95 plus £1.06 postage The Computer Users' Year Book, 430 Holdenhurst Road, Bournemouth BH8 9AA.

Mainframe shipments up 25%

A SIGNIFICANT but far from dramatic increase in the value of sales by UK computer equip*ment manufacturers* over the last year is shown in the latest Business Monitor statistics from the Department of Industry. These relate to the second quarter of 1976.

Mainframe shipments, at more than £51 million in the second quarter of 1977 compare with £41 million in the same period in 1976, while sales of *peripherals* increased from £146 million to £176 million. Total sales by the UK Industry were nearly £223 million, compared with £186 million.

Export sales, at nearly £96 million, were up on the figure for the second *quarter of 1976 which* was £79 million, with peripherals accounting for nearly £49 million compared with less than £34 million.

Imports, however, continued to outstrip exports and stood at £164 million in the *second* quarter of 1977 compared with £124 million in 1976. This increase was more than accounted for by an increase in peripheral imports from £45 million to £77 million.

Imports of parts, however, *increased only slightly*, from £53 million to £55 million.

IBM adjusts prices in US

ADJUSTMENTS to the prices of hardware, and support for certain input and output peripherals and processors, have *been made* in the US by IBM as part of what the company calls "a normal business review."

Support price adjustments *include* 10% cuts on the maintenance charge for a 512K 370/155, the System 7 and the System 3/15. Cuts of 5% were made on maintenance for the System 3/6, System 3/8 and the 370/165, while the charge went *up by 10%* on the System 3/4.

The monthly rental on the 1403-N1 printer has been increased by 10% to $1,081 (£615) while the rental of the 3211 printer is up 5% to $2,000 (£1,137).

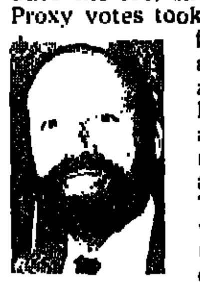
Most key entry products have had prices cut by 25%. This means that the 024 card punch now costs $1,225 (£695) and the 129 card data recorder $3,650 (£2,075). The new prices have not been introduced in the UK.

BCS votes entry fees of up to £50

A BRITISH Computer Society motion proposing a £5 member*ship application fee from* potential members was rejected at the annual general meeting last week. But entrance fees ranging from £5 to £50 were approved and will be introduced next May.

The non-returnable £5 appli*cation fee was opposed by the* BCS' Kingston-on-Thames branch (CW, September 29). The branch is studying ways of increasing membership under a £500 grant from the BCS, and said the £5 fee would deter *people from joining*.

At the meeting there were 16 votes for the motion to introduce the fee, and 17 against. Proxy votes took the total in favour to 419 and those against to 151. But as this was a proposed new article of association a 75% majority was needed, so the motion could not be accepted.



Samet

Proxy voting took the number of votes in favour of entrance fees to 408, with 154 against. A straight majority was enough to carry this motion, as the possibility of introducing entrance fees was already allowed for in the BCS' articles.

From May 1 next year associate members will pay an entrance fee of £5, affiliates and licentiates £10, members £12 and fellows £17. Affiliate schools will pay £5, other affiliate educational establishments £20 and other *affiliate organisations* £50.

The annual meeting heard the inaugural address of the new president, Professor Paul Samet of London's University College.

He stressed the BCS' role as a professional society: "The areas that distinguish a professional society from a self-help club are social responsibility, competence and ethics."

Professor Samet added that the BCS should keep up with what he called the "state of the art" and at the same time be a learned society: "Too often I find the attitude among our members that branch and specialist group meetings are for the practical DP man while conferences and publications are only for the theoretical academic.

"I can only deplore such attitudes. Theory and practice are two sides of the same coin and we should all look at what we carry in our purse."

The meeting also heard that the seven new members voted on to the BCS' 40-strong council were: Peter Cloot, from the business research section at Barclays Bank; David Firnberg, director of the National Computing Centre; Roger Griffiths, *managing director of the con*sultancy Duncan Bransom; Dr David Hartley, director of Cambridge University's computing service; Frank Hooper, head of development at Barclays Bank; Christopher Hudson, who has spent 14 years in the bureau business; and Beverley Rowe, head of London Polytechnic's computer unit.

Two bureaux cut prices

PRICE cuts have been announced by two UK bureaux, CMG Computer Management Group and Tempo Time-sharing.

Tempo, based in West London, has kept its charges at the same level since its formation in 1974, and is now reducing the charge to those who merely use the company's computer time from £6 an hour connect time to £4.50, a cut of 25%.

CMG is running a special offer *for accountants and their clients* until December 31. The company is waiving the joining fee, which contributes to development and maintenance costs. The savings are £75 on the process payroll system and on the incomplete records accounting package, £150 on the ACT ledger system and £500 each on the invoicing systems and ledger systems with analyses.

Tektronix into micros

THE growing proliferation of microprocessors on the market has prompted Tektronix to enter the field of *microcomputer development* systems with a series of equipment capable of operating with more than one device type.

Called the 8000 Series, the system can work with the Intel 8080, the Motorola 6800, Zilog Z80, Texas Instruments 9000 and the Intel 8085 device types, with further additions expected.

The systems operate on the basis of emulating each microprocessor type with programs being run in an in-prototype emulation mode.

Two versions of the system are currently available. The 8002 is a complete, stand-alone system, while the 8001 is aimed at potential users who already have software development facilities.

DOWNTIME by Chad

Trunk call?

IT'S hard to resist puns about trunk calls, but the real focus of attention is the radio-telephone system being used by a zoo official, which has been installed at Whipsnade. Made by Nolton Communications, the system handles the communications between zoo staff over the park's 800-acre area, and it is based on the Nolton Sabre unit, which can be used in a vehicle-mounted or personal mode. Each user, including the zoo's curator, the veterinary surgeon, and park police, has a personal call-sign and can talk to the central base station and other mobile units.

What to call a computerperson

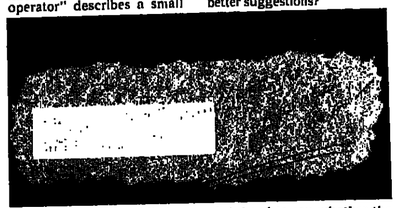
AN uncomfortable gap in the usually abundant jargon of our profession was demonstrated last week by an unnamed national newspaper, which described the British Computer Society as "the 23,000 strong organisation for computer operators".

We cognoscenti can laugh at such mistakes; after all, we know that the term "computer operator" describes a small subset of the total profession.

The real problem, however, is that we lack an adequate one-word term to describe a person who works with computers.

US journals have resorted to a characteristic American abomination, "DPer", which, apart from being short, has nothing to commend it.

Do any of our readers have better suggestions?



WHEN it comes to public images, it is hard to say whether the Post Office or computers come off worse. This particular round has been won hands down by the Post Office, which managed to deliver a computer-addressed envelope, part of which is shown here, to its correct destination. G. S. Dorey, Pfizer's DP manager, who sent me this, adds sorrowfully, "No wonder the computer image is so tarnished."

The winning Porsche in the rally.

Rally round the scorecard, chaps

FOR the life of me, I can't feel that it was absolutely necessary, but technology has struck again. This time the recipient is car rallying, that form of motor sport populated by demented Nuvolaris who shatter the calm of night (unless you happen to be one, in which case it's good clean fun).

So what form of technology has struck, and where? The answer is the computer, or more specifically, everybody's favourite talking point, the micro; and the where is in the rally scoring, a vital key to the enjoyment of the aficionado.

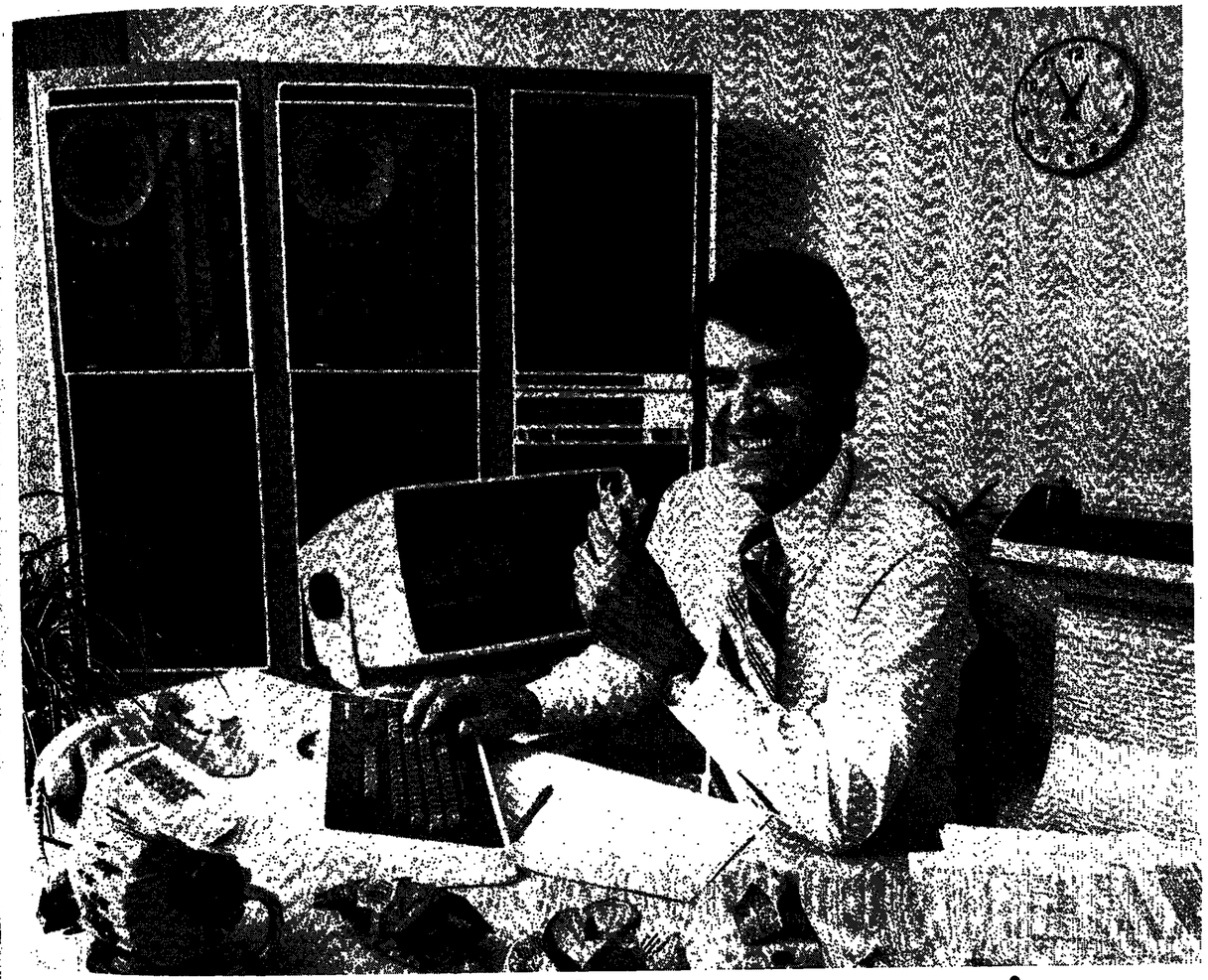
For a reported fee of enormous proportions, but payable only in the strange currency of "The Pint", Hoskyns Systems Development was persuaded to prepare software written using the Coral compiler from GEC Semiconductors, and run it on an Intel MDS system installed at the start and finish point of the Happy Eater Southern Car Rally. This was located in the Pickurd Motor Hotel, Burgh Heath, Surrey, a place reputed to deal in the aforementioned currency.

The object of the exercise was to process information received from the stage checkpoints of the rally, so that the data thus entered would update the position and class leaders in the rally for online transmission to television monitors situated around the hotel. The software was developed by Hoskyns from packages it has developed for use on the Intel 8080, including floppy disc handling routines, and a screen formatter suitable for use with a range of VDUs.

Jim Feeney of Hoskyns and Michael Pickard of the Happy Eater, at the Southern Car Club rally.

As a final word, for those with an elongated sense of proportion, the winner of the rally, Sir Peter Graham-Moor, drove his very expensive Porsche to victory worth £8 plus 20 litres of oil and the Happy Eater Shield (plus replica) . . . on the debit side there was a bill for £1500 for repairing the front suspension and relocating the windscreen.

Ho hum.



MICHIE'S PRIVATEVIEW

The death of school arithmetic

ONE of the strange new sounds of the semiconductor age is the elder's lament for the death of arithmetic. Schoolchildren no longer know of the existence of certain sacred motions by which we, and our fathers' fathers, were taught to extract the square-root. Instead we see the touch of a button on a hand-held calculator.

Just as passive gazing on pornography is believed by cautious souls to deprave and corrupt the senses, so, it is feared, may unrestricted access to instant sums pervert the workings of the intellect.

There is something that the anxious elder may be overlooking. In his own world, whether he works on the shop floor, on the Queen's Bench, in the executive suite, the computer room, or down on the farm, the delegation of detail invariably goes in hand with the expansion of powers. What master chef cares to learn the way a potato should be peeled, so long as he recognises a badly peeled one?

When dealing with complexity, the lazy way is often the best way. In the context of computing and control, the smartest thing of all is to make the outside world do the calculations for you.

We are all familiar with the fact that a child learns to bicycle without first studying Newtonian dynamics or modern control theory. If a computer using this theory were to ride a bicycle, then in a sense two bicycles would be in play, the real-world bicycle and a ghostly bicycle implicit in the detailed mathematical model used by the control algorithm.

The human bicyclist's philosophy is that one bicycle is enough, and that sensory data can be used to extract from moment to moment the few *relevant* state-features needed for a simple and sufficient set of decision rules. Between successive rule-invocations the real bicycle computes the dynamics and the rules, laid down in the form of reflex stimulus-response bonds, do the rest.

A more radical variation comes from the Charles Stark Draper Laboratories in Massachusetts, where I have been visiting my colleague Jim Nevins. He heads one of America's leading computer-controlled assembly projects. Like everyone who has looked at the problem, he is much exercised by close fits. The human worker slaps these into place with speed and abandon. An industrial robot attempting this runs into every kind of wedging and jamming.

We can, of course, compute lots of little feedback loops. Instead, Nevins asked: "Is there any mechanism which can substitute for these and which can be sited in the external world, not in the computer?"

He arrived at an answer which seems, by hindsight, blindingly obvious. The human assembly worker, in addition to feedback adjustments computed in his nervous system, is also aided by mechanical compliance provided by the bunginess of finger tips and the "give" of joints. Accordingly, Nevins wondered whether such compliance could be so extended as to substitute entirely for the need for feedback computations in assembly. He now has all parts mounted so as to "give" a little along two of the three spatial axes. Behold, in fractions of a second square pegs slide smoothly into square holes, round into round, just as if millions of tiny feed-back adjustments to a rigid system were being continously computed.

Much machine intelligence work aims at substituting rule-based systems for the attempt to model inside the machine the fine detail of how things actually work.

Let me close with an illustrative fantasy. We wish to design a robot cricketer. The device must stand in the deep field until the batsman skies a ball in its general direction. The robot's task is then to plot and follow an appropriate interception course.

Solution 1. Take successive sightings of the ball on the fixed retina. Use geometry, trig, and statistical curve-fitting to extract a trajectory, eked out by optical rangefinding. Extrapolate to the expected point of descent. Move at top speed the calculated distance to this point. Halt. Await impact. *Verdict.* much computation; little certainty of outcome.

Solution 2. As above, but move to the expected impact point in a succession of springs, repeating the above computation from scratch at each halt. *Verdict.* Improved outcome but even more work.

Solution 3. Take time off to watch a human outfielder.

The human uses one simple rule. Move towards the ball, continuously adjusting speed and direction so as to hold its retinal image as near stationary as possible. The details of the trajectory, which in windy weather may be quite complicated, are left to the external physical system to work out.

Solution 3 achieves exquisite accuracy for next to no computational work. The lucky robot is left with spare capacity to turn loose on the higher theory of cricket.

In the same vein, I like to think of those children who sensibly push the labours of school arithmetic into the electronic box having their energies freed for better things.

Like saving up to buy a hand-held programmable with which to do some really interesting arithmetic!

Aid for online programmers

ANOTHER software product has emerged to make life easier for the online programmer on ICL hardware. This time, the benefactor is the Oxford-based firm of Telecomputing.

Coincidentally, the new product, TPS Interactive Operator, has been announced only shortly after the Verse online programming aid from ICL Dataskil (CW, September 29).

Interactive Operator is designed to provide for all the common needs of the program amendment and testing cycle. Facilities include the editing of program text, job control strings and input test files, submission of jobs and examination of results, all from the terminal.

Any of this data can, in addition, be output to a local hard-copy printer attached to the terminal.

TPS Interactive Operator is not necessarily run under TPS. It can be supplied as a stand-alone program.

The software runs on 1900 machines under George 1+ or 2+, or on 2903 or 2904. Stand-alone operation on the latter machines can be under ETS-2 or MTS. The programmer can operate from a 7181, 7184 or 7561 terminal.

TPS Interactive Operator will be released in two phases. The first, including editing commands for Plan and Cobol programs and any serial record file, will be available next January. The second phase, with the rest of the facilities, is scheduled for April.

Cost for each phase will be £1,000 initial fee and £10 per month rental.

SOFTWARE FILE — EDITED BY STEPHEN BELL

US study opts for software copyright

WITH the idea of patent protection for software now firmly rejected by the UK Parliament, attention is turning to the continuing international debate on *software copyright*.

Valuable ammunition for UK software copyright proponents is provided by an examination of the topic now reaching its climax in the US.

The US study, organised by the Committee on New Technical Uses of Copyrighted Works (Contu), has resulted in a balance of opinion in favour of copyright as a means of protecting software.

A report, summarising the evidence of several hearings and a period of public comment, exists in draft form and is at present under review. Final recommendations will be submitted to the US Congress.

The UK has already come out with its own software copyright recommendations, in the form of a chapter in the Whitford Committee's report on copyright and designs law (CW, March 17). These recommendations will eventually make a contribution to Parliamentary discussions on an amended copyright law, but this process has not yet begun.

The Contu discussions have run up against a problem already encountered by UK patent and copyright discussions. This is the difficulty of adequately defining a computer program.

Contu's original definition was "a series of statements or instructions in a form or order intended to be directly utilised by a computer."

In the latest round of discussions, representatives of the Computer and Business Equipment Manufacturers' Association and the Information Industries Association, argue that the words "or indirectly" should be added.

"This would allow source programs as well as object code, to be copyrighted," explained Frank Cullen, a CBEMA member and manager of Burroughs' patent headquarters.

Another spokesman, consultant Frank Dorun, raised the question of subroutines and modules, which are not, by themselves, series of executable instructions. The definition should be amended to include these, he said.

The UK Patents Act omits any definition, leaving the question to the judiciary in an individual case. An unsuccessful attempt was made, in the passage of the Bill through Parliament, to introduce such a definition.

The Whitford Committee report attempts a preliminary definition: "a series of instructions for controlling or conditioning the operation of a computer to make it perform certain desired tasks."

The report notes the efforts of Contu, so the US body's insistence on an adequate definition could result in such a definition, absent from patent law, being incorporated in copyright law.

There were some dissenters in Contu, who felt that instructions for controlling a machine could in no sense be considered as "a literary work," but it appears that US legislation for software copyright is well on the road to the statute book.

Contu is also considering protection of database information under copyright law, and it is felt that the existing law can be applied with little difficulty to databases.

50% savings claim

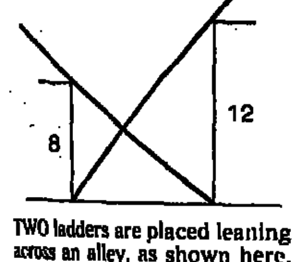
A PRODUCT originally devised by a consultancy to improve the productivity of its own programmers has now been generally released, to join the growing number of language pre-processors on the market. It marks the first entry into the package business by Landage Computer Services, of Hyde, Cheshire.

The Landage pre-processor allows a programmer to abbreviate Cobol keywords. The software expands these abbreviations, generating conventional Cobol for input to a compiler. Despite the simplicity of this function, Landage claims that it has saved as much as 50% of development time on some programs.

Against a widely held view that design constitutes, or should constitute, the major part of program development, these figures indicate a surprising importance for the code-writing function. "The writing takes quite a time, especially as it has to be clear," said a Landage spokesman.

The pre-processor runs on ICL 1900 equipment and can output to card or disc with an optional listing. There are already four users and another under negotiation. Price of the package is £400.

Puzzler



TWO ladders are placed leaning across an alley, as shown here. The flanking walls are 8 and 12ft high respectively, but the width of the alley is not known.

At what height do the ladders intersect? See page 63 for solution.

Spelling out aims of PL/Z

THE microprocessor language PL/Z, from Zilog, announced exclusively in Computer Weekly last week, represents a novel attempt to improve the ease and standards of programming for microprocessors.

The primary concern of PL/Z is to integrate the assembly level and high-level approaches to programming, allowing the easy use of either approach as appropriate, in different parts of the same task. The language also aims to introduce a more rigorous structure into microprocessor programs.

For a long time, most resident programs on micros were written in assembly language. In recent years, there has been a gradual progress towards wide use of high-level languages, both standard and purpose-built.

There was still, however, a need to access the low level facilities of the machine for functions such as I/O and for optimisation, Zilog maintained.

"Integrating programs written in both high-level and low-level languages into a single task is typically complicated and impractical", said PL/Z's developer, Charlie Bass. "The simple facility of calling an assembly language routine from a Fortran program is outside the repertoire of the typical programmer".

The easing of this interaction was of critical importance to the acceptability of high-level languages in the world of microprocessors, Bass added.

PL/Z's method of interaction is to use the same kernel of data definition, programming and control structures for the two languages.

This "kernel" of instructions is supplemented by a high-level or assembler level set of data manipulation instructions, forming the two languages, PLZ/SYS and PLZ/ASM respectively.

PLZ/SYS and PLZ/ASM modules can be called in the same way within a system. The translators for the two languages produce object code in the same format, minimising linking problems.

The control instructions are more structured than many high-level languages and include IF ... THEN ... ELSE and CASE statements, and an interesting form of DO statement. The condition providing the exit from the loop is included among the instructions in the loop, rather than being specified in the DO statement.

● Programmer Notes is on page 15 this week.

CAP's MicroAde a highlight of Datafair

THE first public appearance of CAP's MicroAde program development system for microprocessors was one of the highlights of Datafair.

Techniques for microprocessor program development have polarised into two fundamental approaches. A program is developed on a minicomputer, usually with testing in a software environment which simulates the target micro. A cross-compiler then generates the object code. Alternatively, the entire development is done on an elaborated version of the micro, with a resident compiler.

CAP takes a middle way, by developing the programs in a Digital Equipment PDP-11, which can feed code down a communications line into the micro for testing.

MicroAde is available in two levels, using assembly language or CAP's own MicroCobol. With the latter version, the Cobol program is developed in the mini, and compiled there into a portable intermediate code, which is loaded on to the micro.

The intermediate code assumes a "virtual machine" of a certain fixed pattern, and a microprocessor-resident interpreter manages this code in terms of the actual micro used.

The virtual machine concept could preclude use of some of the advanced facilities of a particular micro, admitted CAP chairman Alex d'Agapeyeff. On the other hand, he pointed out, the software to emulate the virtual machine could well provide capabilities not possessed by the micro in native mode.

At assembler level, the developer uses the assembly language of the target micro. This is assembled in the mini and sent to the micro as machine code.

While this is, at first sight, a less portable concept, a spokesman pointed out that the DEC utilities used for program development and testing were independent of the target machine. "This makes the system as a whole 80% portable," he contended.

Portability will enable the user to attach various micros to the same distributed processing network, and to change from one micro to another as required.

Microprocessors currently supported by MicroAde include Motorola 6800, Intel 8080 and Zilog Z80.

Non-IBM versions of Easytrieve planned

FOLLOWING the release of a Siemens 4000 version of the Easytrieve information retrieval package (CW, September 29), Dean Mohlstrom, president of the international division of developers Pansophic Systems, has told Computer Weekly that he favours further diversification outside the IBM area, and hopes to persuade the company to look seriously at his policy.

If the Siemens Easytrieve proves successful, an opportunity will clearly exist for conversions of Pansophic's other products to approach the wide Siemens user base in West Germany, says Mohlstrom.

This should, in turn, encourage the company to look at other "national" markets, including the UK's ICL base and, perhaps, the Hitachi machines in Japan.

Although the Siemens and Spectra 70 Easytrieves are the only adaptations of Pansophic products to hardware incompatible with IBM, the products are already being used on the IBM compatible Amdahl 470 and Fujitsu M series.

As already pointed out in Computer Weekly (CW, August 5, 1976 and August 4), IBM is beginning to accept that availability of independent software is an aid to hardware sales. This attitude was the right one, said Mohlstrom. Siemens, by making its operating systems substantially compatible with IBM, was also "leaving the door open" to independent software suppliers.

market place

Contact Stuart Moore

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COURSES

A REPEAT of last year's successful two-day course is to be presented again by John Parker of Stospact Systems Ltd. It is designed for programmers, technical managers and other DP personnel who require an understanding of the "structured" system and program development techniques and includes structured design, structured programming and walkthroughs.

The course will be held on November 22/23 and costs £30 for BCS members and £40 for non-members. For registration contact British Computer Society head office. Tel: 01-837 0471.

A COURSE on "OS dumps and debugging" designed for reading a dump in an IBM environment is being made available by the Edutronics Group for applications programmers, operators and DPMs. The course is designed to teach how to recognise, analyse and use various elements of the dump including the generation, function and the relationship of various blocks. Contact J. V. Milhelic on 816 758 2280 for further information.

A SHORT course series in two parts, a three-day "digital image processing — course 410" and a two-day "pattern recognition and analysis — course 420" has been organised by Integrated Computer Systems in London, Paris and Munich. The London course will be held on November 14-18. These courses start with fundamental concepts and proceed to advanced techniques with an emphasis on concrete applications and their practical implementation with the available hardware components and systems. The cost of the three day course 410 is £340, and the two day course 420 is £235, or £470 for both the courses together.

For further information contact ICSP UK office at 41 Gough Way, Cambridge. Tel: 0223 69430.

A COURSE on basic Filetab (TabN ICL) has been organised by Computer Power Training School of Cannock, Staffs, from October 25 to 28. "The course examines the full range of package facilities and each member writes and tests a number of practical examples," says the organiser. The fee including accommodation and meals but excluding VAT is £148. For further information phone Cannock 2511.

ONE day seminars and two day workshops have been arranged by Motorola in various centres in Europe. In London, the seminar will be held on October 18, and the workshop on October 19/20. For further information, contact Motorola local offices.

Meeting in Liege

THE fifth international meeting and AGM of the Association for Literary and Linguistic Computing is to be held in Liege, Belgium, on December 17.

The theme of the meeting is the use of a textual corpus. Among those contributing will be Dr W. Martin (Belgium); Dr T. Bungarten and Professor J. Neuhaus (West Germany); Professor S. Allen (Sweden), and the host, Professor L. Delatte, head of LASLA, Université de Liège.

Further information can be had from Mrs J. M. Smith, c/o Manchester Regional Computer Centre, Oxford Road, Manchester M13 9PL. Tel: 061-273 8282, extension 156.

The Liveware Saga by Don

PEOPLE

Allin for Lear Siegler

Lear Siegler Inc of Camberley, Surrey has appointed Peter Allin to manage and co-ordinate the marketing of its range of data products throughout Europe, the Middle East and South Africa. He will be responsible for establishing and supporting LSI's distributors, and providing sales and technical support. Allin was previously director of Technical Services (Europe) for Hazeltine.

Peter Williams, who has been group marketing manager of copying products with 3M UK Ltd, has been appointed general marketing manager of the company's word processing systems and facsimile transmission products in the business communications division.

Succeeding him as marketing manager, copying products, is Richard Flood, who has previously been market development manager within the company.


Allin — Preston — Heath — O'Byrne

John Preston has been appointed as promotions manager for Europe by Itel International, a subsidiary of Itel Corp. He was formerly a consultant with PACTEL, the Computer and Telecommunications division of PA International Consultants.

Data General has appointed **Owen Wright** as personnel manager for North West Europe, covering the UK and Benelux. He was previously compensation manager with Honeywell Information Systems.

Kelvin Minns has joined Harris Systems of Hitchin as a sales executive for its interactive and distributed processing display terminals in the South West of England area. He was previously a salesman in the scientific and technical division of British Olivetti.

Ampleon Electronics of Hove has appointed **David Weeks** as product manager responsible for its range of digital panel instruments. He was until recently sales director of Exel Electronics.

Logica man is candidate

Shaun O'Byrne, a principal consultant with the computer consultancy division at Logica, has been selected as the Labour Party's candidate for the Chertsey and Walton constituency at the next general election. He is a prominent member of the Labour Committee for Energy Organisation.

Micropower Ltd the microcomputer systems company, of Stevenage, Hampshire, has appointed **Robin Heath** as its sales and marketing manager. He was previously product marketing manager with SDS Components.

Jim Kinnear has joined Rectel Computers as a systems analyst and will be based in Manchester. He was previously an analyst/programmer with Data Logic of Greenford.

DIARY

OCTOBER 18

Microprocessors. J. D. Klinker. IEETE. Lanchaster Polytechnic, Rugby, 18.30.

How to recruit and keep staff. Monte-Fraser. DPMA Sheffield Branch. Royal Hotel, Barnsley, 19.00 for 19.30.

Effective operations management. Jim Read, DPMA. Bull Hotel, Gerrards Cross. 19.45.

Building on success cornerstones of development from 360 to 3033. H. W. Tuffill, BCS Nottingham branch. TI main lecture theater, Nottingham University. 19.00.

Computer chess. Dr Peter Gray. Aberdeen University, College of Commerce, Aberdeen. 19.00.

OCTOBER 19

Implementing minicomputers. DPMA Central London branch. Control Data Institute, 77 Wells St, London W. 18.00 for 18.30.

Human factors in the use of display terminals. Dr Barry Barber, Tom Stewart, BCS, Displays Group, City University, London, EC1.

Using IDMS and data dictionary with Cobol. BCS specialist group. Polytechnic of Central London, 115 New Cavendish St, London W1. 14.15.

Human factors in the use of display terminals. Open discussion. Room U316, City University, Northampton Square, London EC1. 14.00.

Database design and use. Tim Bourn. BCS Manchester branch. Manchester Business School, Booth St, Oxford Road, Manchester. 19.00.

Performance evaluation. Professor P. A. Samet. BCS Newcastle branch. Barras Bridge Building, Newcastle University, Haymarket, Newcastle upon Tyne. 19.00.

OCTOBER 19-21

Conference on database management systems. Association of System 2000 Users for Technical Exchange (ASTUTE). San Francisco, USA.

Management conference, computer services exposition, annual meeting. Association of Data Processing Service Organisations Inc (ADAPSO). San Francisco, USA.

OCTOBER 20

Some reflections from a new broom. D. Harding. BCS, North Staffs branch. Post House Hotel, Newcastle-under-Lyme, 20.00.

Microprocessors, J. C. Cluley. BCS Birmingham. The Priory Dene Hotel, Edgbaston. 18.30.

Student evening. BCS Coventry. Computer Centre, University of Warwick. 19.30.

Ceefax. BCS Dundee, Angus Hotel, Dundee. 19.00.

Developments in Algol 68, R. M. De Morgan and R. M. Bailey. BCS Algol Association. County Restaurant, Civic Hall, Guildford. 19.30.

Theory and principles of structured programming. J. Pugh. BCS South Yorks. Brincliffe Oaks Hotel, Nether Edge. 19.30.

OCTOBER 25

Innovation and development. J. Street and H. Shafi. BCS Nottingham TI main lecture theatre, Nottingham University. 19.00.

OCTOBER 25-26

Computerisation — an objective outlook, seminar. David Firnberg and A. R. K. Hardcastle. DPMA Marine Engineers Conference Centre, London EC3. Details: Betty Smith, 01-626 2057.

Meeting. RTL/2 User Group. Excelsior Hotel, London (Heathrow). Details: SPL International. 01-836 7833.

OCTOBER 25-28

Radar 77 — conference. IEE, IERE London.

OCTOBER 26

Statistical Tabulation System 555 "Computers in survey analysis" Scarton House, Polytechnic of North London, Holloway Road, N7. 17.30.

Distributed intelligence through the use of intelligent terminal systems. Raythcon Comser Data System DPMA Essex branch. Raytheon Comser Data System, The Pinnacles, Harlow, Essex. 20.00.

Our job — computer performance measurement and tuning. R. Hancox and D. J. Hall. BCS South Wales. RSO for Gwent. Rotel Hotel, St Mary Street, Cardiff. 19.00.

LETTERS

Spread of calculators

I WAS interested to read Mr Hennessy's comments, headlined "Seeds of destruction", in which he warned of the possible deleterious effects of the spread of calculators in schools. He argues that when everyone has their own personal calculator the need for acquiring skills of mental arithmetic may die out, with serious effects on people's mathematical ability. That may well be true, but on the other hand it might well not be true.

For example, it just could be that building up a stock of software in our heads to allow routine computation of numbers may actually interfere with or inhibit the use of our brains for more sophisticated mathematical thinking. Thus the spread of calculators might be beneficial rather than harmful. I am not prepared to guess which of the two is the more likely, but I would like to make a point that the area is rich in problems and shrouded in ignorance.

The more debate there is on this and similar matters now, the more likely we are to avoid catastrophic consequences.

DR CHRIS EVANS
Division of Computer Science,
National Physical Laboratory

Lack of information on CAL

I WAS disappointed to read (CW, September 22) that Dr Philip Barker has missed the point of my remarks on the lack of published information on the cost-effectiveness of computer assisted learning (CAL) in industrial training.

When preparing my report "Computers in Industrial Training and Management Development in the 1980s," I found relatively few reports specifically on industrial applications of CAL. Training managers interested in CAL often have to extrapolate from descriptions of educational uses such as those detailed by Dr Barker. Even the growing literature on CAL in military training is of limited value since there are some important differences between military and industrial training.

Your article (CW, August 18) summarised the main arguments which led me to call for a national effort to give industrial trainers better information on the potential of CAL as a training method.

The Training Services Agency is now considering this recommendation.

ROGER MILES
Assistant Director
National Development Programme in Computer Assisted Learning.

THE EDITOR welcomes letters commenting on subjects published in Computer Weekly, or on original topics. All letters must be accompanied by the writer's name and address, not necessarily for publication.

Food for thought from the Newcastle seminar

YOUR readers must be very grateful for the Newcastle University/IBM Seminar on Computer Science this year, since it has certainly provided them with a lot of interesting reading. I would like to comment specifically on two things in the September 29 edition.

First, as the UK collaborator with Ted Glaser I would like to answer briefly Tony Gunton's letter until I can get a copy to Ted for his response. Ted would almost certainly agree with your correspondent that optimisation means much more than getting the most out of hardware. In many central processor design groups, however, little else is considered except speed at the code level. Certainly from 1958 to 1970 we saw a full flowering of interrupt methods in expensive single processors. I am also convinced that hardware designers during that period did not think much about structure.

One of my lectures at Newcastle was intended to show how Directed Graphs can provide what seems to be the right structures for both hardware and software design in the future. This work is based on the Logos project, Case Western Reserve University, which was initiated and directed by Ted Glaser from 1967-74. It was funded very well by ARPA and shows clearly Ted's commitment to structure in design over the last 10 years.

Turning to your article "Focus . . . on teaching the academics," I would like to stress that many of the people who were expressing views in that article would not be classed by me as typical academics. Many of them seem to have found great interest in the work on Algol whenever it was and want to preserve that environment into the future. I know how they feel, since I started my working career designing radio valves which I regretfully had to abandon in 1954 just when (in Ferranti) we had invented some spectacular valves for digital computers.

Many of the computer science and computer engineering academics I meet in British universities, polytechnics and foreign establishments have a very healthy and realistic view that our subject is at the moment moving at a very alarming rate and it is our job to try to avoid the next generation of designers re-inventing the wheels which we know have flat tyres.

Professor FRED HEATH
Department of Electrical and Electronic Engineering,
Heriot-Watt University.

Micro problems that must be faced

THE fears that Professor Dijkstra has expressed regarding microprocessors (CW, August 25) are very real.

It is easy for the manufacturers to mass produce micros. As a result, the manufacturers have to market their products aggressively. This has resulted in microprocessors being sold at very low prices.

The cheapness of micros together with the euphoria created about them, mainly by the Press, has resulted in a vast number of companies which believe that unless they quickly incorporate micros into their products, their very existence is threatened.

This has resulted in designers and engineers who have little or no previous experience with computer systems having to design and build both the hardware and the software for their systems. To my mind, this situation is of great concern.

In addition to the lack of computer experience of the typical designer of a micro system, microprocessors are, by conventional computer standards, very crude.

They do not have the hardware error detection features which are standard with other computers. For example, they do not have any parity error checking facilities. This could result in a micro system continuing functioning with no indication that an error has occurred.

The argument that the micro manufacturers put forward saying that such features are not needed because micros are extremely reliable, is spurious.

Although they may be reliable, the validity of the circuitry which interfaces the micro to its memory and I/O devices cannot be guaranteed. It throws an extra burden of responsibility on to the designer and builder of micro systems. In particular, the system must be designed so that if it fails, then it fails safe.

Micros do raise problems that must be faced up to. They may become more sophisticated, but possibly a bigger problem is that the designers of micro systems must receive the correct training in how to design micros into their systems.

EDDIE BLEASDALE
Bleasdale Computer Systems,
Morden, Surrey.

Not so convincing . . .

TOM GILB (CW, September 8) raised the question of cost-effectiveness of database software in his article, "Do database languages help programmers?"

In his familiar style he scored many direct hits on the myths he intended to shoot down, but to dismiss the claimed benefits of DBMS as "not convincingly documented" is itself not so convincing. Nor, at least to us, is his tarring of "Codasyl-based languages and IMS" with the same broad brush.

At Scicon we obviously have interests in the matter as agents for IDMS, a Codasyl-like system. But we have been able to observe that the "cost multiplier" is by no means fixed, nor is it limited to large users. A high proportion of UK IDMS users we know are medium-size users with production orientation and interest in complex structures (e.g. BOMP).

Is this a chance to use Gilb's hypothesis?

ROGER TAGG
Information Systems Division
Scicon
London, W.1

A book for Prof Dijkstra

IT is not uncommon for computer scientists to purport to be experts in all branches of engineering but did Professor Dijkstra say, "I wish you would tell me which elevator uses them so I can avoid riding it" ("The things they said at the Newcastle seminar", CW, September 15)?

As far as I know he is not an expert on the use of computers in lift systems and should not therefore pontificate about a very complex engineering area.

If he would like to know a little more about computer control of lifts or which other users have microprocessors in them I can suggest a good book.

Dr G. A. Rabbatts
Senior Lecturer
Control Systems Centre
UMIST
Manchester

Redifon names new chairman

A SENIOR executive of the Rediffusion group, Ronald Denny, has been appointed chairman of Redifon Computers, a Rediffusion subsidiary. He is already a director of several other Rediffusion companies, including Redifon Flight Simulation and Redifon Telecommunications.

Meanwhile, 17 new orders announced by Redifon Computers over the last few weeks for its Seecheck key-to-disc system include four from local authorities as well as orders from manufacturers like Vauxhall Motors and GEC Fusegear.

The local authority orders are from the London Borough of Lambeth, which is to have a 13 terminal Seecheck system, its neighbour the Royal Borough of Kensington and Chelsea, which is installing a six terminal system, West Midlands County Council and South Bedfordshire District Council.

Ronald Denny . . . new chairman of Redifon Computers.

Vauxhall Motors is installing a Seecheck system involving 28 terminals located throughout its Luton and Dunstable factories. These will be used for data collection and file inquiry, and one of the main applications will be the online recording of materials receipts for stock reporting. The Seecheck system will communicate in IBM 2780 mode with Vauxhall's IBM 370 mainframe computer.

GEC Fusegear has already installed its Seecheck system. This is at its Liverpool factory, where 10 terminals are distributed throughout the manufacturing and administrative areas. Data captured is transmitted to an IBM 370/158 at Stafford.

DP is now part of a nurse's training

FOR those who are worried by what we read about mix-ups in hospitals, and for those who have seen a few muddles in DP from time to time, it is comforting to know that a VDU in every ward has a far better record of success in conveying messages than does an underpaid hospital porter who does not speak English too well.

At the London Hospital in Whitechapel there are VDUs in all the wards and, at a presentation given by the BCS Medical Specialist Group as part of Datafair 77 last week, Miss Maureen Scholes, senior nursing officer at the hospital, praised the service that went with the VDUs.

Nurses are now being given a modicum of DP knowledge as part of their SRN training and they are generally enthusiastic about the assistance that computers are giving them in their work.

More than 500 lectures were given to nursing staff by computer specialists at the London Hospital during 1976, and this is backed up with frequent visits by the computer men to the wards.

The hospital management is having a frustrating time. Money is a problem, but, as Dr Malcolm Forsythe, area medical officer for Kent, pointed out, the worst difficulties are more technical.

Money for DP is given to the health service by the DHSS, and the DHSS extends its degree of control to insisting upon the use by the health authorities of standard packages which it supplies to them.

Dr Forsythe's complaint is that there are major faults in the standard systems supplied by the DHSS, and the mechanism for obtaining change has become so cumbersome that officials have no control over it.

He is not against standards, but he would prefer it if they were adaptable to suit the user's requirements. Dr Forsythe's audience of medical people clearly knew what he meant.

As for the future, Miss Scholes is looking forward to the time when she can have hard-copy from her VDUs without waking the patients in the middle of the night.

And it seems that the 10% of X-ray photographs which at present get detached from the label showing which patient they are a picture of, may be more secure in future as specimen identification systems are developed.

In-house system at Manchester GS

Ivor Smith officially switches on the machine, using the DECwriter. Looking on is John Gow, managing director of Systime, while pupil David Gregory records the event with his camera.

A SYSTIME 3000 installed at Manchester Grammar School will have a dramatic effect on computer studies at the school, according to David Copley, the deputy headmaster and sixth form mathematics master, who has been one of the leading inspirations behind the school's move into computing.

Until now pupils have been restricted to a batch service, supplied mainly by London's Imperial College.

"Having our own computer will remove the frustration of batch services and will greatly improve the boys' appreciation of computing," said Copley, adding this tribute to Imperial College: "We owe it all to them."

Copley said the Systime 3000 was in constant use from 8.30 am until 5 pm — and at present use is limited to sixth formers only. Next summer the school hopes to bring younger boys into contact with the machine by introducing computer studies at third year level.

The school does not offer public examination courses in computer studies. Instead the course, which combines studies of the development of computing with Fortran programming, is an option in the general studies syllabus.

The new computer will not be operated by the boys. "The pupils will look through the computer room window, but that's as close as they will get," said Copley.

The machine will also be used for administrative jobs such as analysing information about new entrants. It has already been used to process a questionnaire Manchester sent to other direct grant schools.

Manchester Grammar's machine, paid for by the school's appeal fund, has a memory of 32K of 16-bit words, two 10-Megabyte disc drives, a tape unit, four display terminals, a DECwriter printer terminal and a card reader. This last peripheral is considered one of the most important for, as Copley said, "The boys need the self-discipline of having to punch each hole on each card correctly."

The Systime 3000 was switched on at the start of this month by a Manchester Grammar old boy, Ivor Smith, data processing manager at Ellesmere Port.

Sales up at Univac ahead of target

INCREASED sales of its three principal ranges were behind the success of Univac during its last financial year, said UK managing director Bill Read.

The three were the 1100 series, Series 90 and, said Read, "believe it or not, card punches, where the marketplace, contrary to general belief, is far from dead."

He pointed out that sales productivity had increased by over 40% in the last four years. Internationally, worldwide sales during 1976 were $1,238 million (£711 million) and its installed base was valued at $7,800 million (4,480 million).

Univac was now half-way through its current financial year and, "we are in excess of our planned objectives, total 1100 series sales to date are worth £10 million, and orders for the Series 90 so far total over £2 million," said Read.

He also expected further major orders and forecast that Univac would be able to record its best year ever in terms of orders, revenue and profits.

Golborn group gets Nova 840

A DATA General Nova 840 system has been installed by Colborn UK Division, part of the Colborn Group, to provide a fast and economical method of formulating the ingredients of animal foodstuffs.

The system will be offered as a service to customers and will be carried out via online VDUs at a computer centre in Heanor, Derbyshire, and by tele-

compatible paper tape output for direct transmission to customers.

The configuration consists of 64K word main memory, two 2.6 Mbyte disc drives, a tape cassette drive, a 165 cps printer, a paper tape reader and paper tape punch.

In addition to the main application, the Nova handles stock control and product labelling.

Swift acceptance is GA priority

GETTING formal acceptance for General Automation's Swift Interface Device from the Society for Worldwide Interbank Funds Transfer, Swift is one of the first really important tasks for Peter Weinreb, GA's newly-appointed European sales manager (CW, September 22).

Weinreb hopes to have this acceptance by October 18, when the network is officially inaugurated in Brussels, although he admits that it might take another month.

GA is the biggest single supplier of SIDs to European banks, having shipped 120, about half the total.

"There have been ups and downs with Swift," says Weinreb, "but our main problem was project management. We cured this by transferring the management from our UK head office at Burgess Hill to our European headquarters at Aachen, a much more central location. We also transferred some of the SID people from Burgess Hill to Aachen — but not all of them.

"With the other SID suppliers we also had problems with software, mainly because the final size and complexity of the Swift network was not appreciated at the start of the project. In our case we found that our monitor software, which was developed in separate modules, outgrew the 24K words allowed by our SID minicomputer, the SPC 11/65. The other 8K words of directly addressable memory is reserved for user terminal partitions.

"But the monitor software has now been successfully optimised and although it is not officially accepted yet, most of our customers are now using our SID in live operation. Many of them are handling about 1,000 messages a day."

GA has gained a firm foothold in about 100 European banks through supplying them with SIDs, and Weinreb feels confident that this will lead to substantial further business. And could include contracts for systems like the multi mini distributed database network which GA has installed at the Bank of America in California.

Asked about the threat to GA and other specialist minicomputer manufacturers from the IBM Series 1 Weinreb comments, "IBM cannot supply much systems software and what bank with a big in-house programming department wants to bring in an independent systems house to deal with this problem? I also believe that inter-departmental rivalries will deter the manager of the mini operation from choosing Series 1 because of anxieties about being taken over and absorbed by the IBM mainframe section."

GA's main weapon in its fight for a bigger share of the business systems market will be its new 440 Data Series. This is a family of interactive Cobol oriented multi terminal systems configured around the powerful GA 16/440 mini. According to GA, the ANSI Cobol software compiles at up to 10 times the speed of a typical IBM 370/145. Other major features of the 440 DS include database handling.

ABOUT 600 computer users from all over the UK visited a private exhibition at the London International Hotel last week presented by ITT Business Systems to show off some of its new data communications products. These included the ITT 3630 intelligent terminal which is seen here being demonstrated to TV personality James Burke. He was there making a film for ITT about the products on show.

Paper group sets up time sharing service

A NATIONWIDE time sharing service aimed at existing batch bureau users and software/systems houses, as well as first time users, has been introduced by Bunzl Data Systems, the newly-created bureau subsidiary of Bunzl Pulp and Paper Ltd.

Bunzl is a £200 million a year manufacturer of a diverse range of paper, packaging and plastics products with plants all over the UK as well as in the rest of Europe and North America.

The firm's DP operations in the UK are based on a network of Digital Equipment minicomputer systems, including one PDP-11/35 in London, two 11/35s at Jarrow, Northumberland, and one 11/35 and one 11/70 at Amersham, Bucks, which is now the location of the head office of Bunzl Data Systems.

BDS has taken over the complete UK operation and is now selling time on the five machines to outside users. The service, called Dataphone, offers raw processing time as well as a group of packages developed by Bunzl for applications like sales order processing, stock control and ledgering.

In addition, Bunzl is developing fixed asset accounting and financial reporting systems and is thinking of introducing a word processing bureau service. Longer term developments could include a production control package. Fortran facilities for engineering designers can already be provided.

The software development side of the BDS operation is called Datasys.

Cobol programs online editor

AN ONLINE editor for Cobol source programs on ICL 2903s, 2904s and 1900s has been developed by GP Software and is being marketed by Gresham Computer Services. Both firms are based in Southampton.

Parts of a program to be displayed can be chosen by line number, paragraph name or a word or string anywhere in the coding. Single letters can represent strings and also be used as tabulator commands. Coding such as file definitions can be called across from other programs.

The system, called Videcob, costs a single payment of £1,750 or a monthly rental of £58.50.

NEWS IN BRIEF

Transdata record orders

RECORD orders worth £500,000 for July to September, 1977, have been announced by Transdata, the terminal equipment and micro-based systems manufacturer of Havant, Hants.

Of this, £50,000 was accounted for by export orders from Norway, Belgium, Holland and France. UK orders included those from the Admiralty, the Post Office, Marconi, the Independent Broadcasting Authority, and the Home Office.

A UNICOM/VTS shared logic word processing system from Logica has been installed by British Petroleum at its shipping department in Britannic House, London. Valued at £76,000, the order comprises nine VDUs, a central processor, 10 Mbytes of disc storage and three daisy wheel printers. The equipment will replace stand-alone automatic and conventional typewriters.

AN order for Burroughs equipment has been placed by Leicester Building Society for implementation of "LesterNet," an extension of the society's existing online network. The order, worth £750,000, includes three B 774 front-end processors, 192 modems and 170 Burroughs TD 833 visual display units.

AN investigation of microprocessor hardware development aids, software, and the economics of microprocessor systems is to be carried out by the Electrical Research Association in collaboration with user companies. A main theme of the study is to help systems engineers appreciate the technical, financial and managerial aspects of developing microprocessor systems.

NINE local authorities in the Irish Republic are to install ICL 2903 systems to provide payroll, budgeting, payments and receipting applications. The councils involved are Clare, Donegal, Kilkenny, Limerick, Meath, Monaghan, Roscommon, Roscommon, Waterford, and Wicklow.

A TOTAL of 24 NCR 255 check out terminals and an NCR mini have been ordered by International Stores for its new superstore at Gainsborough Lincolnshire, to be opened next month.

FORD's computer centre at Brentwood has received its final delivery of BASF peripherals. The order, worth £500,000, was for 40 6356 tape drives and five 6050 control units.

THREE LX 4500 business systems have been installed by Logabax to handle general accounting, invoicing and stock recording, and analysis reports for Frank Wilkins of Penge, V. Benoist of Shepherds Bush, and Greenhill and Elis of Morden. The orders are valued at about £39,000.

THE General Navigation and Commerce Company of Dubai is using British stationery on its ICL 2903/30. It is a product of PFC (Continuous Forms), of Cradley Heath, near Birmingham.

Aiming for hobby market

A BID to produce an industry standard system for storing data on low-cost audio cassette tapes is being made jointly by General Instrument Microelectronics and EMI Tapes.

The move is intended as an attempt to pre-empt any diversity in recording standards in the use of low-cost audio cassettes in the growing range of hobbyist computers, "intelligent" TV games and inexpensive small business systems.

Unlike the other prime systems used to date, the Computer Users Tape System, CUTS, which employs a low density tone-coded system, GIM and EMI Tapes have developed a method that can place ... million bits of raw data ... 400K bit of error coding ... standard C60 cassette ...

Calculating the true worth of an operator

OP SPOT

By Bernard Allen

OPERATORS are paid shift allowance as a form of compensation for working unsocial hours. But does the level of shift allowance fully compensate them for the inconvenience incurred?

A married man is forced to be away from his wife and the single operator has his social life disrupted. Shift work is tiring and can affect health.

The cost of buying or renting a computer system plus the maintenance and people costs, represents a major investment.

By employing a shift work scheme, companies are able to get the fullest use possible from their equipment, and in doing so increase production and profits.

By comparision the allowance received by operators often seems small.

There is no uniform method or level of shift allowance paid within the computer industry.

The National Union of Bank Employees has as its members all the main banks and many companies involved in finance. An examination of the methods used by NUBE members revealed three basic methods:

Under one method, operations staff are paid a fixed allowance according to grade. This scheme is employed at the National Westminster Bank where, for example, an operator at grade 4 gets an annual allowance of £529 while the chief supervisor receives £794.

Some companies calculate shift allowance as a percentage of the employee's basic salary. At Barclays Bank two types of shift pattern are in operation. At the London centre, operations staff work a 24-hour, five-day, four-shift system for which they receive a 20% allowance. This is modified by a minimum of £441 and a maximum of £611.

A method used by another company is a points system (see Figure 1). In this case the 24 hours of the day are divided into four-hour portions and points are awarded in accordance with the inconvenience incurred by working them.

These points can then be calculated for the shift-pattern employed and the shift allowance awarded accordingly.

For example, working on Monday from 8 am to 12 noon might have a value of one point, while the same hours worked on a Sunday might be worth five points.

In comparison with these figures press shop workers at Fords Motor Co at Dagenham receive a 27½% shift allowance for a five-day, seven and a half hour three-shift system. London Transport train drivers get an extra 33⅓% enhancement for any hours worked outside the period between 7 am and 6 pm.

Ted Cluff, vice-chairman of the Data Processing Management Association, addressed a meeting of the Operations Specialist Group of the British Computer Society in June this year. On that occasion he expressed the view that DP staff should not regard themselves as a breed apart from other workers.

Do operators feel the level of shift allowance is too low? If so, who is to blame?

Is it themselves for being too parochial or company managements for not calculating the true worth of their operators?

Op Spot would like to hear your views on the subject.

	Mon	Tues	Wed	Thur	Fri	Sat	Sun
0001-0400	4	2	2	2	2	5	5
0400-0800	4	3	3	3	3	5	5
0800-1200	1	1	1	1	1	5	5
1200-1600	1	1	1	1	1	5	5
1600-2000	2	2	2	2	4	5	5
2000-2359	3	3	3	3	5	5	5

Figure 1. The Points System that is used to calculate shift allowances. Note: These figures are hypothetical.

Supervision course

AN operations supervision course run by Hoskyns Education will take place from November 21 to 25. Basically it is for operators and senior operators who will be taking on further responsibilities, and is a mixture of lectures, tutorials and practical exercises.

The course is at present planned for London but could be run elsewhere if demand is sufficient.

For further information contact the Course Registrar, John Hoskyns & Co Ltd, 91-93 Farringdon Road, London, EC1M 3LB. Tel: 01-242 1951.

PROGRAMMER NOTES

Liking for the first language

THE lack of comparisons of the various "structured programming" techniques is highlighted this week by N. H. Jennings, of Skewen, West Glamorgan. Each technique has its enthusiastic promoters, but few programmers have gained a broad perspective of the methods devised, or an appreciation of the difference between them.

"I have experience of two methods, which have about as much resemblance as Cobol and Fortran", says Jennings. "On one hand, IBM's Hip design method, as I understand it, was concerned with reducing the size of modules and eliminating GOTOs, while, on the other, Alan Cohen, among others, advocates designing the program from the structure of the data, with GOTOs allowed where necessary, to overcome the shortcomings of Cobol and in situations where optimisation is required".

This likening of divergence in structured programming methods and in languages leads to some interesting ideas.

It would be instructive to see what, if anything, governs preference in structured programming style.

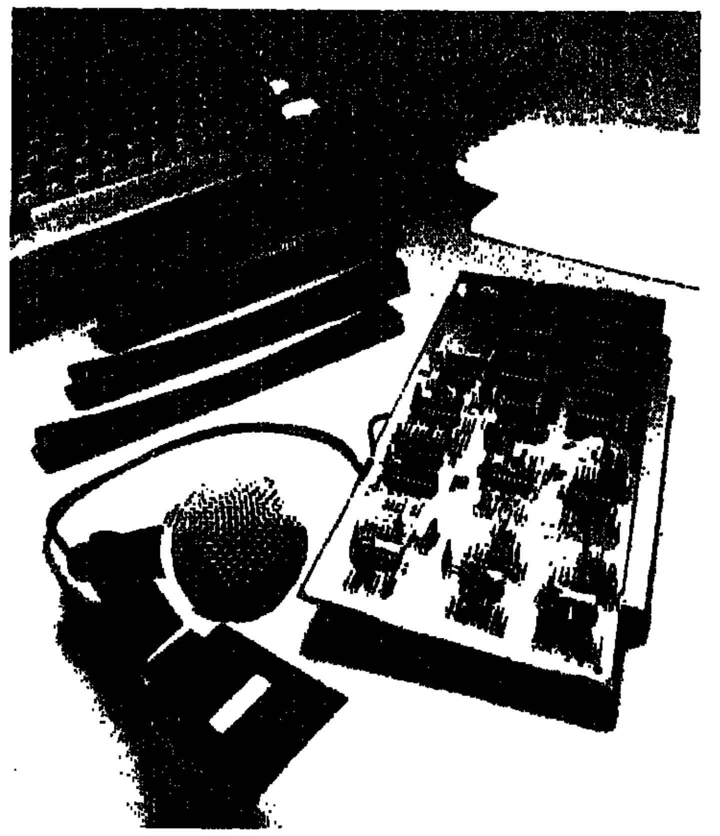
Many programmers seem to develop a marked liking for the first language in which they programmed. Is the same true of structured programming methods? The acid test of this would be whether many programmers or installations have adopted one technique and later decided that another better suited their needs.

Does the most appropriate style of structured programming depend on the type of applications programmed, or perhaps on the way of thinking of the individual programmer?

With regard to the practical value of structured programming techniques, Jennings finds little difference, in his experience. "Both of the above techniques worked, to the extent that well-coded programs were completed and tested more quickly than with previous methods."

Electronic machines that can synthesise human speech, and others that can understand it, are now available from retail stores in America. And computers that can carry on a conversation may be assembled by the hobbyist for less money than many Americans have paid for a stereophonic sound system. HESH WIENER reports on some of the latest developments . . .

For hobbyists– computers that talk and listen



Speech recognition on a personal computer is made possible by this SpeechLab, which sells for $249 in kit form, or $299 assembled, including a microphone.

"COME here, Mr Watson, I want you." With those words, Alexander Graham Bell first demonstrated electronic voice transmission on March 10, 1876. Scarcely a century later, the heirs to Bell's pioneering role are building electronic machines that can synthesise human speech and others that can, in a rudimentary way, understand it.

These inventors have a message, too. It is, "Come here, Thomas J. Watson, you want us."

The newest devices that enable machines to converse are not closeted away in America's well-endowed industrial laboratories. Instead, they lie on the shelves of the retail electronics stores that cater to the foot-soldiers of the computer revolution. Computer hobbyists can buy a speech synthesiser for $400, and a speech recogniser for $300.

A "conversational" computer also needs a central processor and memory but a configuration capable of supporting speech processing devices is available for about $1,000.

By way of comparison, a computer that can carry on a conversation may be assembled for less money than many Americans have paid for a stereophonic sound system. Existing commercial systems capable of processing speech have cost from $25,000 to $100,000 and more. Those systems are more powerful than the new units being sold to hobbyists, but the power of even the most elementary personal computer is sufficient to perform useful commercial work.

Two inexpensive speech synthesisers are currently available. One is the CT-1, retailing for $395 from Computalker Consultants, Post Office Box 1951, Santa Monica, California 90406. The other is the Model 1000, priced at $380, which is made by AI Cybernetics Systems, Post Office Box 4691, University Park, New Mexico 88003.

Both systems are capable of synthesising the range of phonemes produced by the human voice. The CT-1 sounds slightly better, at least on the demonstration tape provided by the manufacturer, and has a wider range of expression. In fact, the pitch control on the CT-1 is so good that the machine can be made to sing or hum tunes.

If the CT-1 is fed by data distilled from an actual speech recording, it can even mimic real voices.

Imitations of John F. Kennedy and Martin Luther King produced by the device are recognisable, although they are hardly identical to the original voices.

The Model 1000 has a stronger machine "accent," but the demonstration materials provided by the vendor are all samples of synthesis-by-rule, a difficult way to generate clear speech. In any event, these two fledgling companies are busily improving their inventions, and the abilities of forthcoming machines should be far greater than those of the current models.

Speech recognition on a personal computer is made possible by a unit called the SpeechLab that sells for $249 in kit form or $299 assembled, including a microphone. The manufacturer of SpeechLab is Heuristics Inc, 900 North San-Antonio Road, Los Altos, California 94022. The SpeechLab distils patterns of sound into numerical abstractions. These data are then stored in the memory of the supporting computer, and processed by a software package that the manufacturer includes with the device. Each word in the SpeechLab vocabulary requires 64 bytes of storage, in addition to that occupied by the software, and the unit is said to be able to distinguish 64 different words with 95% accuracy.

The system is trained by the user, who repeats a word into the SpeechLab's microphone. Once the learning cycle is completed, the system will scan digitised sounds until it matches a spoken word with one in memory. The matching algorithm computes the Euclidean distance between the points in multi-dimensional space occupied by a captured phrase and those in the system's memory. If the spoken word is close enough, the machine decides it has found a match.

The processing is not immediate, and the speaker must pause between words, but the performance of the unit is still impressive, considering that the software is designed to run on an 8080 microprocessor. If a fast minicomputer were used instead, the machine could "read" speech quite rapidly. Speed, however, is not the only goal of Heuristics, a company that serves the microcomputer user.

In addition to the basic software to recognise spoken words, the SpeechLab comes with a high level language called SpeechBasic that enables the user to write programs using the SpeechLab and a standard personal computer as easily as silent users write software for a system that has a VDU. Other programs are also included in the package, as is extensive documentation and a complete explanation of the speech recognition process as it is done by the SpeechLab, and as it has

QUOTE

The newest devices that enable machines to converse are not closeted away in America's well-endowed industrial laboratories. Instead they lie on the shelves of the retail electronics stores that cater for the foot-soldiers of the computer revolution.

been done by more sophisticated devices in industrial research laboratories and in the academic world.

A speech recognition system does not break speech down into phonetic components. Speech synthesisers, however, are controlled by tables of such elementary vocal units. Thus systems that process speech must convert data into intermediate forms as they go about their work.

Phonetic representations of speech are not unique to any single human language, nor do they correspond to the written form of words in most instances. (An exception is the Japanese Katakana alphabet, which is replacing the older and more beautiful hieroglyphs under pressure from the world of modern commerce.)

The universality of phonetic components enables a speech synthesiser to work with most spoken languages.

There are two methods of developing the phonetic data that a speech synthesiser responds to. The method most simple for the programmer, but which produces speech of lesser quality, is synthesis-by-rule. The user looks up the phonetic representation of each word in a dictionary and then writes a program to feed successive phonemes to the speech synthesiser. In addition, the programmer must provide data that affects the tone of the voice. For example, a sentence that asks a question should end on a rising tone.

A computer analysis of spoken phrases can yield phonetic

● Turn to Page 36

Motorola launches new test devices

TO help in testing and analysing microcomputer systems and components, Motorola has introduced two new test systems. As a means of debugging target system hardware and software, it has produced the MPA-1 Analyser, while for hardware components, it now has available the Motest-1 Dynamic tester.

The MPA-1 Analyser is intended primarily for debugging programs, data or illegal addresses. It can also be used to examine stacking operations such as subroutine jumps and returns, to interrupt vector locations in real time, or to check input/output interface registers or buffers.

Mounted in a self-contained housing, with a nine-inch video display, the Analyser presents a segment of 32 hexadecimal words, of both address and data, captured directly from the program stream being executed by the microprocessor. In operation, a trigger word is set to a required location in the address space of the micrprocessor by using the thumbwheel switches mounted on the front panel. Once the trigger word has been recognised, one of three display modes can then be used.

The Motest-1 is intended as a piece of test equipment for hardware components before they are built into systems. Designed to be used with the EXORcisor development system, the tester can accommodate the majority of components from the 6800 microcomputer family. It consists of a control card, which plugs into the EXORcisor, interface cables, test head, executive program, test programs and personality cards for each device type.

MPA-1 — Motorola's analyser for microprocessor systems. See story top of page.

Function cards firm formed

TO meet the growing demand for special function cards in microcomputer systems, a new company, Vector International, has been formed in Belgium to design and manufacture them.

Founded by four former senior managers from Brussels-based Data Applications International, Vector International has reached a co-operation agreement with J. W. Lemmens Elektronika, an electronic instrument manufacturer which has printed circuit production and assembly facilities. With Vector located at the new Lemmens factory at the Haasrode Research Park in Belgium, the company's designs can easily be put into production.

Vector's activities will include the design of complete microcomputer systems, programming, testing and mechanical design for systems as well as the design and manufacture of custom-designed function cards.

Choosing a micro

AS the range of microprocessors increases, the problems of arriving at an eventual choice of a device to suit a particular application becomes more and more complex.

So in an attempt to give some insight into the evaluation of microprocessors for technical staff involved in their implementation, Infotech has launched a three-day course on microprocessor assessment and application.

Further information on the course, to be held in London from December 6 to 8, can be obtained from Infotech International, Nicholson House, Maidenhead, Berks SL6 1LD.

Zilog names UK distributor

ZILOG (UK) has announced the appointment of Micropower Ltd as a distributor of its range of microprocessors in the UK.

Founded in 1970, Micropower has operated as a mini and microcomputer consultancy, working with most of the popular microprocessors. With the granting of this franchise, however, the company will now operate exclusively with Zilog products, from the Z-80 microprocessor to the Z-80-MCS microcomputer system.

It will also be offering courses on the device, starting in October.

Basic question

'WHEN is a microprocessor a computer?'. This is something of a fundamental question, and Intel's Applications Manager, Howard Kornstein, will be putting the subject into perspective as one of the presenters at the Micro in DP conference, to be held at the Royal Garden Hotel in London on October 20-21.

600,000 firms candidates for a first system

SMALL business will soon mean big business for microcomputer system makers. That is the view of Don Muller, senior vice-president of Pertec Computer Corporation, manufacturers of the Altair range of microcomputers. Others, however, feel that such systems do not meet the requirements of the market, being too little and too soon.

Speaking at the Wesson Convention in America, Muller indicated that there was an initial market of some 600,000 companies, each employing between 10 and 250 people, that are still candidates for a first computer system. Following these were another three million companies with fewer than 10 employees, and annual sales under $550,000.

"With small business systems currently ranging in cost from between $5,000 and $15,000," he said, "they are most applicable to a business doing $500,000 a year. Billing and office work are the obvious immediate applications, and these alone will make small computers worth the cost."

He pointed out that the new ranges of microcomputer-based systems now on the market could carry out most of the tasks associated with a small business operation, giving the small businessman access to the same kind of operating and accounting information as a competitor having existing computer facilities.

Applications specifically suited to the small business include keeping ledgers, making out bills and statements, flagging slow-paying accounts, address list updates and simple word processing, all of which can be done on these machines, according to Muller.

The major challenge, however, is in the development of software for these wide ranging applications. A considerable amount of software is already being developed and disseminated by existing users of micro-based systems, and he pointed out that Pertec now has several internal development programs running, that are aimed at creating new software for general business and specialised industrial applications. One of its early creations is the Altair Business System, which is a set of modular packages for accounting, word processing and inventory management.

The potential of the small business computer market is certainly large, and Pertec's chairman, Ryal Poppa, has put an overall figure of $100 million on it by the end of this decade. But exactly in what form that market will be served is open to question, and one of the most vociferous questioners in America in recent weeks has been Sonny Monosson, president of Boston-based American Used Computer Corporation. After exhibiting at one of the recent Personal Computing shows in the US, Computermania, Monosson attacked the idea that many of the new systems coming on the market could be a problem solver for the small businessman. In, particular, his target was the new range of systems coming available for under $600.

"The devastating deception for a businessman," he said, "is a surface illusion that he can solve all his business problems for $595 with a simple little computer . . . but he can't." Such systems had inadequate memory and no software support.

He also raised a most fundamental point when he posed the question of what happens when the system goes down. "Are you to pick it up and bring your business computer records and all to a technician and ask him to fix it when he has time?" he asked.

16K byte memory card

FOR use with computer systems utilising the S-100 bus structure, a new 16K byte memory card has been introduced by Comart.

Priced at £345, the board is available fully assembled and burnt-in, and has a 12-month guarantee. Memory refresh is transparent to the processor, and the 4K dynamic memory circuits used in its construction dissipate a total of five watts.

DATAFAIR 77

John Kavanagh and Robin Webster report on the BCS biennial conference

Call for greater standardisation

COMPUTER users were called to action to put pressure on manufacturers and government for greater standardisation in the computer industry at Datafair, the British Computer Society's biennial conference last week.

Frank Thomas, from the Post Office, stressed that a lot of work was needed on communications protocols (see this page), but the user's case was put over most forcefully by John Powell, data processing manager for the Prudential Insurance Company.

"If a company selects a motor fleet by buying a range of vehicles from one manufacturer or individually selecting vehicles from several manufacturers, it can be sure of standard features and standard operating . . . common usage and legislation have ensured that this is so.

"Not so with computer installations. Because of the vested interests of the manufacturers on one hand and the lack of awareness of governments on the other, coupled perhaps with a fair degree of tardiness on the part of the end users, all organisations are faced with continuing complexity, difficulty and expense.

"End users have received from the industry the maximum credible incompatibility of competing hardware and software, in some cases even from the same manufacturer." This had led to the locking in of the end user to his supplier.

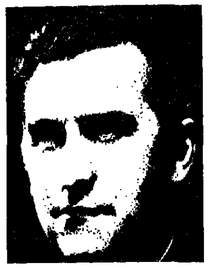
Powell called for a forum for users' views on standards, organised by the government which, he pointed out, was the UK's biggest user. Such a forum could protect users in the same way as organisations like the European Computer Manufacturers Association looked after the interests of suppliers.

Powell also suggested that the government should support and co-ordinate more computing research, rather than leaving it to industry.

He went on, "Standardisation would not only enable the end user to plan more readily and to avoid technical obsolescence, but would create the environment in which the manufacturers would be forced into a much more competitive position. This would ensure that end users and hence the community would benefit from improved cost/performance and ensure that beneficial technical improvements would be more likely to see the light of day than under some current strategies."

The government had a vested interest in leading the way, given the country's increasing dependence on the efficient and effective use of computers.

He added, "Government action of a positive and creative nature is required to ensure that throughout the community there exists a greater awareness and understanding of computers."



John Powell . . . a call for a forum for users' views on standards.

The things they said.....

OVERHEARD on the Logica stand at the Datafair exhibition:

"What's so special about Logica's micros?"

"They're the biggest in the world."

* * *

"If anyone actually wants to read these slides, tell me, and I'll stop" — Speaker at a Datafair presentation.

Japan now on threshold of an information age

A SHORTAGE of natural resources has forced Japan into knowledge intensive industries, and the country is now on the threshold of an information age, said Kaoru Ando, president of the Fujitsu Institute of Computer Science.

The value of output from the knowledge industry had grown by six times to £92,000 million between 1966 and 1977. Of that, almost one-third was from information processing, which accounted for slightly more than education and almost three times as much as the printing industry.

The latest plan from the Japanese Computer Usage Development Institute recommended that $66.4 million should be spent on working towards an information society by 1985. Over half of this, $36 million, should go on computer oriented education, including the provision of hardware. Other areas included medical care systems ($7.8 million), transport systems ($2.5 million) and government systems ($2.2 million). Above $1 million would be spent on home terminals.

Ando said that major systems already running included an online message switching network linking 7,200 offices of 88 banks, a nationwide staff placement system which also handled the collection of unemployment insurance premiums, and a seat reservation system for the national railway company.

And new projects under way included information systems for the home. About 300 homes in a new town have been equipped with computer based facilities such as computer aided instruction, facsimile, burglar alarm systems and "television shopping".

Ando said the rate of progress was hard to predict because it depended on how the human mind adapted to these rapid changes. "People are facing great psychological difficulties. They have to come to grips with the computer and adapt to the new world of the information society."

Users must take more active role

—POST OFFICE DIRECTOR

USERS must play a much more active role in the production of communications standards, according to Frank Thomas, director of network planning in the Post Office telecommunications division.

"Although networks have come a long way, progress on user interface protocols is much too slow," he said. "If we are to make data transmissions as freely available as Telex and telegraphy, we must have standards. Users must work on the PTTs and the hardware manufacturers: there is a lot of work to be done in the user area."

400 visitors

Paying visitors at the conference part of Datafair numbered only 400, far below the expected 700 and almost one-third fewer than the 580 at the last Datafair two years ago.

Datafair organiser Air Commodore Malcolm Jolly said, "It's extremely disappointing considering we have 23,000 members." He added that the number of non-paying visitors to the exhibition part of Datafair could be as many as 2,000.

One problem highlighted by Thomas was how users should get together. "It is difficult to see where the users' forum should be," he said.

Thomas got over the picture of the telecommunications division as a practical, cost-conscious organisation. "The name of the game is meeting communication needs in the most economic way," he said, adding that new media such as fibre optics would not revolutionise costs over the next 10 years and that terrestrial transmission methods were cheaper for Europe than satellites.

"The bulk of transmission will continue to be done using our Datel service," said Thomas. "It's cheap and it's everywhere. A dedicated network would provide a better service but to get it as cheap as Datel and with the same geographic coverage would take some doing."

Another speaker on communications was Professor Georges Anderla, the information management director at the EEC's directorate for scientific and technical information and information management, who talked about Euronet, the EEC's network aimed at giving access to information databases all over Europe.

But as well as making information widely available, Euronet gave important spin-offs in international co-operation, he said.

The Euronet PTT consortium could well serve as a model for further co-operation. It had been a stimulus to the setting of hardware and software standards such as X25. And national communications authorities were entitled to use Euronet software and firmware for their own networks, so cutting development costs.

In addition, the EEC was supporting the development of a common command language to help users access information from databases using different retrieval software. Work was also being done on automated translation and multi-lingual thesauri and terminology databases.

"The long-term benefits of these programmes to the user will be of great magnitude," said Professor Anderla.

DAVID BUTLER TALKS OF MODERN PRESSURES

A demand for new skills among computing professionals

THE convergence of computing and communications and the growing acceptance of word processing and electronic telephone exchanges is giving companies the chance to look again at the way they are organised, because they are no longer restricted by technology to organise around the computer. That was one of Datafair's main themes.

In this interview with one of the principal Datafair speakers, David Butler, chairman of Butler Cox and Partners, John Kavanagh looks at the pressure these new trends put on heads of computing departments.

"FIVE years ago the computer, communications and office equipment were under separate management in organisations. But big companies find themselves having separate negotiations with IBM on these three areas," said David Butler. "So now there is a definite trend towards having a management service director responsible for all three.

"Management services directors have 12 to 15 years' experience in computing, but not much in the other areas, so there is a demand for new skills among computing professionals. It's not enough just to draft in communications people, for example; to be properly used the communications expertise has to be welded to the computing expertise."

David Butler . . . "management services managers are not keeping up with ideas."

Butler said the management services directors' experience meant that they still thought in terms of a central computer: "Companies can now revert to 'thinking BC' or 'Before the Computer', as the technology allows them to do things in the way they want. This means that it's easier for us to plan with managers who know little about computers: perhaps we should run a decontamination course for management services directors."

The emphasis is now shifting away from the mainframe computer towards the electronic switch, embodied in the new generation of telephone exchanges.

The reasons for growth of this trend are interesting.

"Productivity is very low in offices, mainly because there is little investment in equipment," said Butler. "This lack of investment is due to the fact that the equipment is very specialised and has a low level of use. Compare a lathe in a factory, which is probably used six hours a day, with a photocopying machine, which is used for one hour a day. We have found that the investment in office equipment per employee is one-tenth of the investment in the manufacturing industries."

This situation is leading office equipment manufacturers to design multi-function devices, said Butler. There are now word processors which interface to the Telex network and facsimile machines which transmit to themselves and so double as copying machines. But the problem arises of how to connect all these devices together in order to make the best possible use of them.

"One of the really important components is the switch, which controls the flow of information between the devices," said Butler. "Management services managers are not keeping up with these ideas.

"For example, two thirds of the electronic exchanges installed are used only for voice and not data communications. But such an exchange is a really big investment in the future. Companies should have a clear policy on what they expect to achieve with such devices, otherwise they will just be driven by the technology again. Not many companies have such a policy: they are buying blind."

To help organisations keep abreast of new developments Butler Cox and Partners has formed a research organisation, the Butler Cox Foundation, in conjunction with a US telecommunications specialist, THEM.

So far a dozen members, including the Post Office, Plessey and Rank Hovis McDougall, have become subscribers.

One of Butler Cox and Partners' main aims since its formation earlier this year (CW, February 10) has been to go international, and in the next couple of months the company will be opening a subsidiary in Holland. It has already worked in Sweden and Belgium and a major scheme with a pharmaceutical company in Holland has developed into an international project.

The arrival on the market of the IBM 3030 series of processor with their MVS Systems Extension, the emergence of CPU plug-compatible suppliers like Amdahl and Itel, and of the Japanese as a major force on the computer market, are all inter-related. The Systems Extension on the 3033, which offers a performance improvement of about 14%, involves a number of new microcoded instructions. In addition, the whole instruction set of the 3033 is microprogrammed rather than hard-wired as on the 168, making it possible at some time in the future for IBM to alter the microprograms to suit individual customer requirements.

TIM PALMER talks to Dr David Freeman, US consultant with a wide interest in the subject, and looks at the considered view from Amdahl of the 3033 and MVS/SE.

Japanese threat to IBM a challenge to UK software

THE growing Japanese invasion of the European and US computer markets offers enormous opportunities for the British software industry, and for individuals prepared to provide language, support and marketing services to Japanese companies.

That is the view of Dr David Freeman, a consultant with Ketron Inc of Wayne, Pennsylvania.

Ketron is providing a wide range of consultancy services to Fujitsu of Japan, and Dr Freeman's personal interest and experience is in IBM operating systems.

"The one great disadvantage that the Japanese face is their apparent inability to speak and write good English. They seem to be getting worse rather than better, and as a result they have an enormous need for people who can turn manuals into good English, and handle all the front-end tasks like market representation, field support, documentation and training," says Dr Freeman.

Dr David Freeman . . . "an apparent Japanese inability to speak and write good English."

"Surprisingly, the problem is the same in the other direction: IBM Japan's local manuals are as poor as those produced by the national manufacturers there.

"Software development is another area where there are big opportunities, particularly applications software geared to Western business practice."

So what should people who want to offer their services to the Japanese do?

"Contact the overseas marketing representatives of companies like Fujitsu, Hitachi and Nippon Electric. They already have offices in all the major countries," says Dr Freeman.

There is no doubt in his mind that the Japanese are going to take on the world in a way which none of the European manufacturers has managed to do.

"Fujitsu today is a $1100 million company and growing fast. At present it only exports 3% of its output but the plan is to increase that to 20% in five years. That means $500 million of overseas business by 1983. Some of it can come from fast-developing countries like South Korea and Taiwan, and it is possible they might do a major deal with the Russians, although I doubt it. So much of it must come from the US and Europe."

As a student of Fujitsu's grand strategy, Dr Freeman is keenly interested in Amdahl Corp, in which Fujitsu has a 28% stake.

"Fujitsu's plant in Sunnyvale is right alongside the Amdahl plant, and it is well placed there to keep a close eye on IBM, and not get caught out by anything IBM may do in the future."

Dr Freeman sees companies like Amdahl with the 470, Itel with the AS series and Control Data with the Omega as very exposed, and vulnerable to a decision by IBM to cut off users of non-IBM machines from future releases of the IBM Systems Control Programs.

"No customer can afford to have his system frozen at a given MVS release," he says. "Their access to new peripherals and improved systems performance would be shut off, and that would be a disaster.

"Microcoding parts of the operating system is very expensive, and I believe that the Systems Extension for MVS on the 3033 and 168-3 may be feints by IBM to throw the competition off the scent.

"I believe that IBM is working on brand new architectures to get over the problems it has encountered with MVS, particularly the overheads that the operating system imposes on the CPU.

"IBM admits that MVS and VM impose a 60 to 70% overhead, and Amdahl and Fujitsu have managed to reduce this to some extent with their Direct Channel Address Translator, but only to about 40%.

"I see IBM creating processors in the next generation, each one specifically designed to run something like Cobol or VSAM or VTAM or Fortran. The existing object programs will not run too well on these, but the source programs should run well enough."

In this context, Burroughs has just announced an Attached Fortran Processor, available as an optional "back-end" for the company's large-scale 6000-7000 line, and designed for the user with a considerable business workload and a large scientific processing requirement (CW, September 29).

Dr Freeman supports Amdahl in believing that it is an IBM software world, saying he believes that the US PCMs, plus Fujitsu, Hitachi, and possibly Siemens, will all help to increase the aggregate market share of machines capable of running IBM software.

In Japan, Fujitsu is developing an MVS-type operating system, OS4F4, and although Dr Freeman acknowledges that it is too early to say whether it actually works, he believes it will probably provide Amdahl with an escape route if IBM moves to make it impossible for the 470 to run new releases of its operating systems.

"Hitachi, though, is only developing a version of VS1," he notes.

He also sees a tough time ahead for CDC, although statements from William Norris, founder and head of the company have emphasised that the Omegn 480 plug-compatible offering is only a short-term venture set up to sell more IBM plug-compatible peripherals.

"IBM is going to go in head to head against CDC's Call 370 bureau service in the next couple of years. The anti-trust settlement under which IBM sold Call 370 to CDC and agreed to keep out of the services business for five years, expires next year, and IBM will make a major world-wide thrust in that market.

"The key product for the services market will be the VSPC Virtual Storage Personal Computing package, which allows users to develop programs from a remote terminal in near-English," says Dr Freeman.

The view from Amdahl

THE view at Amdahl Corp on MVS/SE, and on IBM's future hardware architecture policy is consistent with that of Dr Freeman.

"The principal threat to Amdahl of MVS/SE is not its effect on us but the possibility that people will believe it to be a serious blow," Dr Gene Amdahl told the French paper Ordinateurs recently.

"Our slow death by microprogramming is not imminent, simply because large CPUs cannot tolerate a high level of microprogramming without a major reduction in processing speed.

"After studying the 3033 processor, our analysts have concluded that IBM has added about 13 instructions to the set, only two of which appear to give an appreciable improvement in performance. In fact, the main performance gain comes not from microprogramming but from improvements to the algorithms and coding in the modules which have been altered for MVS/SE.

"Thus these micro-instructions are only small obstacles to compatibility for Amdahl and the other CPU PCMs.

"We have also studied these micro-instructions with a view to simulating them without altering the hardware, and are satisfied that we could achieve the same improvement in performance."

Amdahl produces a strong justification for what his company is doing, pointing out that, because of its industry dominance, IBM has set de facto standards for the industry.

"IBM's sheer size presents it with major problems. The memory chips on the 3033 are only 2K-bit, whereas we are currently offering 4K chips and will soon move to 16K.

"But what can IBM do? Supposing that of the 3,000 orders it has received for the 3033, 2,000 turn into actual installations, and that each has an average of eight Megabytes of memory: that means a total of 16,000 Megabytes, which is way beyond the capacity of the whole semiconductor industry for some time to come."

Seminar plans

ONE of the reasons for Dr Freeman's visit to London was to gauge the likely response to a three-day seminar he is considering holding in January or February next year on the new Data Encryption Standard algorithm set by the US National Bureau of Standards.

He expects Honeywell and IBM to announce products in the near future which include encryption chips, and the seminar will address questions such as the point at which these should be inserted in a system, and who should hold the keys.

"Overall title of the seminar is the State of the Art in Cryptographic Protection of Data, and the programme will include an 'introduction to cryptography,' details of the IBM-NBS standard, generation, distribution and installation of cryptographic keys, managing a protected computer, and key management concerns."

The cost of the seminar will be about $400, and people interested should write to Larry Buchsbaum, executive vice-president, Ketron Inc, 8305 Swedesford Road, Wayne, Pennsylvania 19087, US, for further details.

Tim Palmer analyses the announcement of the 3032 and 3031

IBM weights pricing policy towards sales

APART from the pricing policy, which is heavily weighted towards outright sales and follows that of the 370/148 rather than the 3033, the announcement of the IBM 3032 and 3031 processors contains few surprises.

As expected (CW, September 29), the 3032 is a straight replacement in the product line of the 370/168-3, capable of executing 2.4 million instructions per second, mips, compared with the 2.7 mips on the 168-3. For people considering an upgrade, the 158-3 is rated at 0.9 mips.

Similarly, the 3031 replaced the 158 in the product line, and is a suitable upgrade for people who are still running a 145, or have a 148 on rental. It is rated at 1.0mips, compared with the 0.43 mips of the 148. The ratings in all cases exclude the MVS Systems Extension.

The MVS and VM systems extensions, announced with the 3033, are available on the 31 and 32, other operating systems supported on both systems are VS/1 release 6, SVS release 1.7, and release 5 of VM 370. DOS/VS release 34 is supported on the 3031 but not on the 3032.

DOS is supported on the 168, and the decision not to support it on the 3032 is consistent with IBM's desire to wean users away from DOS and if possible on to SVS.

IBM says that 75 to 80% of UK 168 users and 15 to 20% of 158 users are already running MVS, and that it expects 25% of 158 users to have made the switch by the end of the year. An independent source suggests that there are about 18 MVS users in the UK.

Although the 3033, 32 and 31 were all designed at Poughkeepsie, New York, each was designed by a different team, and it is not possible to field-upgrade from one model to the next.

There are signigicant differences between the three models: the 33 and 32 are both water-cooled machines, as is the 168, whereas the 31 is air-cooled. However the heat generated by the 33 is marginally less, and by the 32 considerably less than that generated by the 168. Power consumption on the 3033 is 25% less than that on the 168, and only 20% more than on the 3032.

Only the 3032 has 4K-bit memory chips; the 31 and 33 both have 2K-bit chips, and IBM explains that the volume of 4K chips being produced is sufficient only for one model in the line, and that the choice of model was made on the basis of projected sales, and optimisation of size and power consumption.

Both the 32 and the 31 have a two-display two processor console, designated the 3036; the two processors are functionally interchangeable and one is for the use of the operator and the other for service support. In the latter role, it initiates and monitors diagnostic procedures and logs error statistics on floppy disc.

It is also used with a new remote support facility which enables the on-site engineer to connect the service processor to one of IBM's regional support centres.

The link will be made over dial-up lines, and can only be made with the concurrence of the user. It will be available from February, 1978, and will be used for the 370/168 and all the 3030 series machines. IBM has its own internal support network based on 168s in Cosham, to which all European support offices are linked. Called Retain 370, the network is also linked by satellite to a similar 168 system in Boulder, Colorado, and the databases on the two machines store details of all the hardware and software bugs which have been reported from customer sites, together with solutions.

Prices of the 3032 range from £1.35 million purchase, £32,600 monthly on 48-month term lease plan and £35,860 on monthly rental for a 2 Megabyte system.

A 6-Megabyte system costs £1.73 million to buy and £48,570 a month on rental.

The 3031 has the same six channels as are standard on the 3032, but cannot take a second block of channels. Both machines have a 32K-byte cache memory. A minimum system sells for £712,000, leases for £18,260 a month and rents for £20,480 a month.

A maximum system sells for £1.1 million and rents for £32,840 a month.

BRIEFING . . . . . .

ALTHOUGH the 3033 is being built in Havant, Hants, with first shipment next April the 3032 and 3031 are, like the 158 and 138, to be built at IBM's Montpellier factory in France. Shipments are due to start next May.

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THE Havant factory is being built up as the European manufacturing centre for communications products like the 3790 and 3705. IBM originally said that mainframe manufacture there would cease in 1979, but now says that it may extend into the early 1980s.

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UNLIKE the 138 and 148, which have bipolar technology built in, the 3030 series is built in IBM's Monolithic Systems Technology, which is widely used on System 360 and System 370. A display at the Havant factory showing the progressive reduction in processor circuitry size features a number of MST chips, all made not by IBM but by Texas Instruments. "The chips are to our design," said a spokesman, "but we get them from several suppliers."

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THE Havant factory has been preparing to build the 3033, known internally as Meridian, since 1975. Immediately before that, it was preparing to build one of the machines in the FS series which IBM suddenly cancelled.

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THE plant at Havant can build up to 30 3033s at any one time. As it takes about three months to build each one, this implies that the maximum output is about 120 systems a year. Forecasts of likely requirements keep fluctuating, but the plant does not expect to have to build as many as 30 systems at one time.

Univac releases emulation facilities

A WEEK before IBM's announcements, Univac introduced emulation facilities which allow users to run IBM operating systems on the largest 90-series machine, the 90/80 (CW, October 6). The emulation package rents for a competitive £150 a month.

Targets for the facility will be IBM users running DOS/VS and OS/VS1, particularly on 145s and 155s.

Faced with a move to MVS anyway, such users may well find the mature VS/9 operating system on the 90/80 an attractive alternative, and the new emulation facilities will enable them to run their IBM system and application software unchanged while they convert.

The package includes hardware to achieve channel compatibility, dynamic address translation and program event recording, and Univac says that the overhead in emulation mode is about 3%.

Univac would prefer customers who switch to the 90/80 to convert to VS/9 as well, and it will clearly be more economic for them if they do, because the system software, including the interactive program development facility and the DMS/90 database system are included in the price.

However, it will be possible to bring across almost all IBM and plug-compatible peripherals, and there is no reason why users should not run their IBM programs on the 90/80 under any operating system, including MVS, indefinitely if they wish.

In general, where conversion is undertaken it will be necessary to adapt any network to Univac protocols, and Univac believes that the lower overheads on VS/9 make it an attractive alternative to MVS.

The 90/80 has a similar power rating to the 3031, and memory expands in half-Megabyte steps from 512K-bytes to 4-Megabytes. The company says the VS/9 will run in half a Megabyte, and runs comfortably in one Megabyte.

Prices are not relevant, because adjustments are likely in response to the IBM announcements.

The Greater Manchester County Fire Service is to be the first to be equipped with a computer-based mobilising system, having just ordered £600,000-worth of equipment from the Ferranti Military System Division. Based on an Argus 700G, with disc store, mag tape, video terminals, and teleprinters for the fire stations, the system will contain data on 40,000 streets in the Greater Manchester area. When an emergency call is placed, the operator will input the location details, and the computer will output recommendations for suitable appliances for the location. It will also advise on special risk areas in the neighbourhood of the fire. Information on the location of the fire, and appliances needed will then be passed over Post Office lines to the selected stations.

How to get more out of a network

A COMPREHENSIVE solution to the problem of maximising uptime in a computer network has been introduced by Racal-Milgo.

Called the System 180 Network Diagnostic Controller, it comes from the ICC-Milgo division of Racal-Milgo's US operations. Based on an Intel 8080 microprocessor, the System 180 is designed to be installed centrally and makes use of proprietary features included in the Racal-Milgo line of modems.

The company says that for a network including 20 or more modems, the System 180 costs about 20% of the total price of the modems. It operates an overlay on the network, be it a point-to-point, polled multidrop or hierarchical. The System 180 carries out continuous diagnostic checks while the network is in use, and any remote site can send an emergency signal, both visible and audible at the 180 console, in the event of any malfunction except line failure.

A fully-configured system includes 16 separate channels, each capable of checking up to 254 remote sites. Each modem has to include the optional T7 module which encodes the address of the local site and carries out the test commands sent by the 180.

System 180 is a cut-down version of System 200, developed by ICC under a contract with Bank of America in California.

Full text of two million books can be retrieved

AT a meeting of the British Computer Society information retrieval group last week three speakers described present systems which can store quantities of data between 10^{10} and 10^{12} bits on one device with access times ranging from a few seconds to a *few minutes.*

This means that the full text of two million books can be stored in retrevable form, or alternatively 100 million journal references.

The latter figure is far larger than the total collection of on-line bibliographic material presently accessible through the international information systems.

The systems described at the meeting were varied in approach. Ken Groves, of Stabletron, described a system in which video material and computer generated material could be compatibly displayed on a television screen. This gives the opportunity to combine a number of features to make the system convenient for the user.

The input is taken directly from the source material using microfiche.

A variety of material can be entered such as pages of text, graphical data, and pictures. This method also avoids the errors and labour of manual data entry.

The resolution power of the system is such that A4 pages of normal typewritten text can be viewed without difficulty but finer detail must be avoided.

By generating an index at the input stage, a search can be carried out from the video terminal using the computer, and the output can be any combination of computer output or stored microfiche frames transmitted to the video screen.

This gives an update capability to complement the more permanent nature of the microfiche. The terminals may be accessed locally, or remotely via telephone lines.

Costs of £15,000 for the storage device and £2,000 for each output channel were quoted.

Peter Waterworth, of Plessey Microsystems, described a holographic storage system on film with a capacity of 10^{12} bits which has read, write, and update capability.

He gave a figure of £100,000 for the cost of the device but anticipated much lower figures when volume production was under way.

Roy Brierley of the Wellcome Foundation, described why the firm found that access to large text collections was necessary. In part this resulted from increasing legislation on drug safety which required that working documents on drug trials and tests must be available for inspection. But also, in patent work or litigation, copies of original documents complete with signatures were necessary.

A "traditional" information retrieval system, based only on keywords and abstracts, would be inadequate since the full laboratory reports and instrument recording sheets must be kept.

A combined system with a computational facility linked to a microfilm storage unit was adopted. Microfilm was more convenient than microfiche because the excessive length of some of the instrument traces made them unsuitable for the *typical A4 size frames.*

A valuable aspect of microform which both speakers emphasised was the extra security which it gives. The stored information must be physically removed before it can be copied and the absence can be noticed, whereas the fundamental advantage of digital information, the ease with which it can be stored and transmitted, creates the danger of easy copying and carrying away.

The cost comparisons were very favourable to the microfilm solution. The terminal could store 35 times the amount on an EDS 60 disc at approximately the same cost and the data input costs were substantially reduced.

P.W.W.

Access for 30 more schools

SCHOOLS under the control of the Inner London Education Authority have had a big upgrade of their computing facilities with the installation of a Systime Series 5000 computer at the City of London Polytechnic. The machine, with 256K memory and two 64 Megabyte disc drives, will support 48 terminals. It will give a further 30 schools access to computing facilities.

At present the number is 113, representing more than half the ILEA's secondary schools.

Interdata aids road research

AN Interdata 8/16 mini with 32K storage has been ordered by the Transport and Road Research Laboratory of the Department of Environment for experimental road research.

The 8/16 will be carried in a "hut" mounted on various lorries to measure road profile and the force applied to the road surface by the wheels of the vehicles.

Glossary of terms

A GLOSSARY of programming terms has been published by the British Standards Institution as part of what will eventually be a 20-volume glossary of terms used in data processing. The volume on digital computer programming is identical with the corresponding section in a similar glossary being produced by the International Standards Organisation.

The BSI glossary is aimed at simplifying international communication in data processing.

Volumes on the organisation, presentation, handling and preparation were published last year and other volumes will cover all types of hardware and software.

BS 3257 Glossary of terms used in data processing, Part Seven: digital computer programming. 19 pp. £4.70. BSI Sales Department, 101 Pentonville Road, London N1 9ND.

The United States is losing its position as the pre-eminent developer of static memory technologies, according to a report developed by the government's Office of Technology Assessment and Forecast (OTAF). The report, prepared by the analytical arm of the US Patent and Trademark Office, is based on an analysis of patent applications and grants during the past decade. HESH WIENER reports . . .

US losing lead in memory technology

WHILE no other nation is yet receiving as many patents for new static memory devices as the United States, the domination of several important technologies by American scientists appears to be fading. This change does not represent a dimunition of scientific creativity within the US as much as the rapid rise of successful research and development programs in other nations.

The trend in electronic memory technology patents is not an isolated phenomenon. Overall, more than one-third of all US patents granted today cover inventions of foreign origin.

Five or ten years ago, most patents granted by the US Patent and Trademark Office for computer memory were granted to American companies, although the distribution of patents in other areas of technological endeavour was more uniform. As computer technology has become an object of industrial development in many countries, intensive research has yielded progress that, in some disciplines, outstrips the work of the leading UK laboratories. More than half the American patents issued for holographic memory developments in the years 1972-1974, for example, were granted to inventors from outside the US.

Japan has become the fastest-growing technological power in the post-World War II era, eclipsing even the leading nations of Europe with their long histories of scientific development. After Japan, the leading developers of technology are Germany, the UK, France, the Netherlands and Canada.

Some of these nations have made substantial advancements in particular areas of computer memory development, while making a few substantial contributions — measured by the number of US patents that have been issued — in other related areas. American inventors have contributed advances in nearly all of the fields reviewed by the OTAF report, even though they do not dominate every discipline in which they are active.

In addition to weighing the contributions of various nations to the development of new memory devices, the OTAF report also seeks to characterise specific technologies according to the pattern of worldwide patent activity they have generated in recent years.

According to the OTAF analysis, magnetic core memory development is in a state of maturity, and evidences this by a decline in patent activity. Magnetic core memory, developed by Jay Forester and his colleagues at the Massachusetts Institute of Technology, was the basis of computer memories produced in the US and around the world for the first three generations of computers.

During the past three years, 35% of the core memory patents granted by the US were for developments of foreign origin. Germany, the UK and Japan are the three strongest foreign developers of core memories for the most recent ten-year period studied by OTAF.

Several types of semiconductor memories are under development or in widespread use today. In general, US patents granted to inventors from other nations comprised 26% of all US semiconductor patents for the past three years. A decade ago, only 18% of similar US patents were granted to inventors from abroad. Japan, Germany and the UK were the most important recipients of patents during the past ten years.

The US holds, and will probably continue to hold, leadership in the development of charge coupled memory devices. These serial memories are expected to succeed electromechanical technologies in many computer applications. More than 70% of all US patents for charge coupled devices were issued during the past three years, and 82% of those patents went to American inventors. The leading foreign developers of charge coupled devices, although their contribution is small so far, are the UK, Japan, the Netherlands and France.

Magnetic bubble memories have also attracted a great deal of attention in recent years. The first patent for a bubble memory device was granted to American Telephone and Telegraph Company's Bell Laboratories in 1969. Since the issue of that first patent there has been vigorous development activity in many nations. More than half the US patents for bubble memory devices have been granted during the past three years, yet nearly one-third of all such patents have been issued to foreign inventors, principally from Japan, the Netherlands and Canada.

Holographic memory, which seemed like the answer to mass storage just five years ago, is believed to be in a state of decline, or at least uninterest. Patent activity has diminished in most countries. It is one of the fields in which foreign patents outnumber domestic ones in the US, accounting for three-fifths of all those granted during the past three years. Japan, Germany and France are doing significant amounts of research on holographic memory, and the French activity has been steadily increasing.

Most of the patents for memory devices are held by a handful of corporations. Of the 450 corporations that have been granted patents for static computer memory devices since 1960, Patent Office data shows that the most active 25 companies account for 30% of all patented inventions. In fact, the top nine companies — only 2% of the firms involved in memory research — hold 22% of all memory device patents.

IBM is the leading developer of patented memory devices, followed by AT&T's Bell Laboratories, Sperry Rand Corp, RCA, (US) General Electric, US Philips Corp (part of Dutch Philips), Siemens, Burroughs and Honeywell.

The OTAF report states that IBM dominates the development of non-magnetic memory devices while Bell Laboratories holds the lead in patents for magnetic devices with nearly half of all the US patents granted. The only area other than magnetics in which IBM is not the leader is in charge coupled devices, where General Electric presently holds more patents than any other company.

Bubble memories are currently the most viable magnetic devices, and their development is counter to a trend away from magnetics that has persisted for ten years. In 1965, magnetic devices accounted for two-thirds of all patented static memory inventions. Today the proportion is reversed, and non-magnetic devices form the basis of two-thirds of all memory patents.

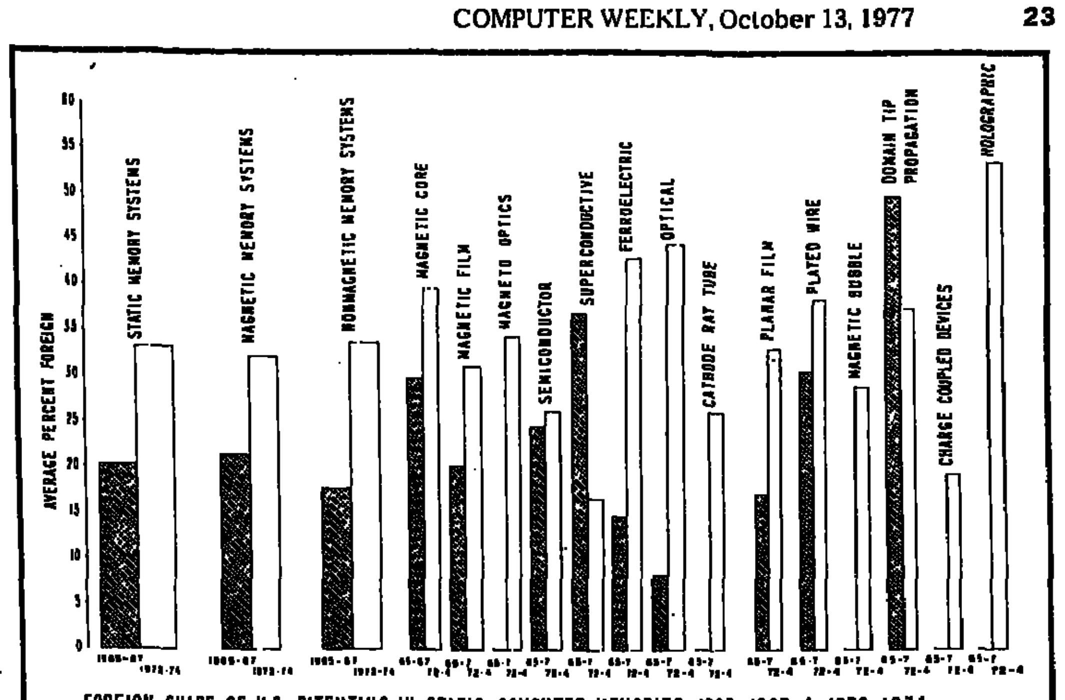
The Office of Technology Assessment and Forecast was established in 1971 to enable people to use better the enormous collection of scientific documents in the US Patent and Trademark Office archives. There are more than 22 million documents in the Patent Office collection, a number growing at a rate of 500,000 documents a year. More than half of the documents originate from countries other than the US.

These documents support more than four million patents that have been granted by the government of the US since 1790 as well as many patents granted by other nations. American law does not recognise any foreign patents, so inventors from abroad seeking protection of their work in the US must file for an American patent.

Patent protection is specifically afforded inventors by the United States Constitution.

The first US patent law was enacted in 1790 and one Samuel Hopkins of Philadelphia received, on the last day of July of that year, the first American patent. It was granted for a method of making potash, used to turn fats into soap.

That initial law proved cumbersome, and three years later another patent law was passed by the US Congress. That law survived until 1836, and was succeeded in turn in 1870. During the last century 60 different laws pertaining to patents were adopted by the US, culminating with a comprehensive code adopted in 1953. That 25-year-old law is the basis of today's US patents.



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